#### STEVEN P. BROGLIO

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School of Kinesiology Ann Arbor, MI 48103
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#### **EDUCATION**

University of Georgia: Athens, Georgia: 2006

Doctorate of Philosophy, Exercise Science: Measurement and Evaluation concentration

Dissertation: Reliability of computer-based concussion assessment programs

*University of Pittsburgh*: Pittsburgh, Pennsylvania: 2002 Master of Science, Health and Rehabilitation Science

Thesis: The acute effect of rotational heading on measures of postural stability

University of North Carolina at Chapel Hill: Chapel Hill, North Carolina: 2000

Bachelor of Arts, Exercise and Sport Science

Highest Honors and Highest Distinction Graduate

CAAHEP Accredited Undergraduate Athletic Training Curriculum

Thesis: The cumulative effect of soccer on postural stability and cognitive function

### **PROFESSIONAL EXPERIENCE**

### **University of Michigan**

School of Kinesiology

Associate Professor: 2013 to present Assistant Professor: 2011 to 2013

Director, NeuroTrauma Research Laboratory: 2011 to present

School of Medicine

Department of Neurology

Adjunct Associate Professor: 2014 to present Adjunct Assistant Professor: 2011 to 2014 Department of Physical Medicine and Rehabilitation Adjunct Associate Professor: 2014 to present Adjunct Assistant Professor: 2011 to 2014

University of Michigan Injury Center

Research Core Concussion Lead: 2016 to present

Member: 2013 to 2016

Institute for Healthcare Policy and Innovation Investigator Member: 2014 to present

### University of Illinois at Urbana-Champaign

Department of Kinesiology and Community Health

Assistant Professor: 2006 to 2011

Director, Neurotrauma Research Laboratory: 2006 to 2011

Director, Undergraduate Athletic Training Education Program: 2006 to 2011

Director, Graduate Athletic Training: 2008 to 2011

Center for Advanced Study

Beckman Fellow: 2010 to 2011 Center on Health, Aging, and Disability Affiliate Member: 2008 to 2011

### **University of Georgia**

Department of Kinesiology

Clinical Coordinator, Undergraduate Athletic Training Education Program: 2003 to 2006

# **University of Pittsburgh**

Neuromuscular Research Laboratory Research Assistant: 2001

### **TEACHING EXPERIENCE**

### **University of Michigan**

School of Kinesiology

Course Instructor: Athletic Training Administration

Pharmacology for the Allied Health Professional

Mild Traumatic Brain Injury in Sport

# University of Illinois at Urbana-Champaign

Department of Kinesiology and Community Health

Course Instructor: Advanced Assessment of Athletic Injuries - Lower Extremity

Advanced Assessment of Athletic Injuries - Upper Extremity

Capstone Proficiency of Athletic Training Clinical Experience in Sports Medicine Experience in Kinesiology Research Special Topics - Sport Concussion

Issues in Sports Medicine Graduate Independent Study

# **University of Georgia**

Department of Exercise Science

Course Instructor: Recognition and Evaluation of Athletic Injuries - Upper Extremity

Introduction to Athletic Training Lab

Clinical Experience in Athletic Training I, II, III, IV

Workshops: University of Georgia High School Athletic Training Student Workshop:

Co-director: 2004 to 2006 Coordinator and lecturer: 2003 Cramer Japan Athletic Training Workshop:

Co-director: 2004

Coordinator and lecturer: 2003

S. P. Broglio Page -2-

# **University of Pittsburgh**

Department of Health and Rehabilitation Science

Course Instructor: Athletic Training Practicum

Basic Athletic Training Lab

Teaching Assistant: Basic Athletic Training

### University of North Carolina at Chapel Hill

Department of Exercise and Sport Science

Teaching Aid: Human Anatomy Cadaver Lab, 1999

# **CLINICAL EXPERIENCE**

# **University of Georgia**

Graduate Research Assistant (Athletic Training Research Laboratory): 2002 to 2006

Approved Clinical Instructor of Athletic Training Students: 2003 to 2006

Graduate Assistant Certified Athletic Trainer - Cheerleading: 2004

# University of Pittsburgh

Graduate Assistant Certified Athletic Trainer - Baseball: 2000 to 2002 Graduate Assistant Certified Athletic Trainer - Women's Soccer: 2002

### University of North Carolina at Chapel Hill

Athletic Training Student: 1998 to 2000

Teams covered: football, track & field, field hockey, baseball, Southeast

Raleigh High School

### **Athletic Summer Camps**

**Certified Athletic Trainer** 

University of North Carolina - Field Hockey: 2000 to 2003

Carnegie Mellon University - Soccer: 2001

**Athletic Training Student** 

University of North Carolina - Field Hockey, Wrestling: 1999

#### **New York Football Giants**

Training Camp Intern: 1999

S. P. Broglio Page -3-

#### **SCHOLARSHIP**

# **Refereed Journal Publications**

O'Connor KL, Niceley MM, Dalton SL, Dompier TP, **Broglio SP**, Kerr KY, Epidemiology of sport-related concussions in high school athletes: National Athletic Treatment, Injury and Outcomes Network (NATION), 2011/12-2013/14, *Journal of Athletic Training* (Special Edition on Concussion - in review).

Alsalaheen B, Stockdale K, Pechumer D, Giessing A, He X, **Broglio SP**, Effects of age, gender, and concussion history on baseline neurocogntive performance: Systematic review and meta-analysis, *Journal of the International Neuropsychologial Society* (in review).

Alsalaheen B, Stockdale K, Pechumer D, **Broglio SP**, Validity of the Immediate Post Concussion Assessment and Cognitive Testing (ImPACT). Systematic Review, *Sports Medicine* (in review).

O'Connor KL, Rowson S, Duma SM, **Broglio SP**, Head impact biomechanical assessment devices: A systematic review, *Journal of Athletic Training* (Special Edition on Concussion - in review).

Meehan SK, Mirdamadi JL, Martini DM, **Broglio SP**, Adolescence concussion results in chronic motor cortical excitability and plasticity change, *Journal of Neurotrauma* (in review).

Martini D, Goulet GC, Gates DH, **Broglio SP**, Long-term effects of adolescent concussion history on gait across age, *Gait and Posture* (in review).

**Broglio SP**, Rettmann A, Greer J, Brimacombe S, Moore B, Narisetty N, He X, Eckner JT, Investigating a novel measure of brain networking following sport concussion, *International Journal of Sports Medicine* (in review).

Eckner JT, Rettmann A, Narisetty N, Greer J, Moore B, Brimacombe S, He X, **Broglio SP**, Stability of an ERP-based measure of Brain Network Activation (BNA) in athletes: A new electrophysiological assessment tool for concussion, *Brain Injury* (in press).

**Broglio SP,** Williams RM, O'Connor KL, Goldstick J, Football head impact exposure reduced subsequent to limiting full-contact sessions, *Journal of Athletic Training* (in press).

Cooper E, Ferrara M, Casa D, Powell J, **Broglio SP**, Resch J, Courson R, Exertional heat illness in American football: When is the greatest risk?, *Journal of Athletic Training* (in press).

**Broglio SP**, Norwig J, Guskiewicz KM, If you're not measuring, you're guessing: The advent of objective concussion assessments, *Journal of Athletic Training* (Special Edition on Concussion - in press).

Kerr Z, Roos K, Djoko A, Dalton S, **Broglio SP**, Marshall S, Dompier T, Epidemiologic Measures for Quantifying the Incidence of Concussion in NCAA Sports, *Journal of Athletic Training* (Special Edition on Concussion - in press).

Alsalaheen B, Stockdale K, Pechumer D, **Broglio SP**, Measurement error in the Immediate Post Concussion Assessment and Cognitive Testing (ImPACT): Systematic review, *Journal of Head Trauma Rehabilitation* (in press).

S. P. Broglio Page -4-

Swartz E, **Broglio SP**, Cook S, Cantu R, Ferrara M, Guskiewicz Km, Myers J, Early results of a helmetless-tackling intervention to decrease head impacts in football, *Journal of Athletic Training*, 50(12): 1219-1222, 2015.

Alsalaheen B, Haines J, Yorke J, **Broglio SP**, Reliability and construct validity of Limits of Stability test in adolescents using portable force plate system, *Archives of Physical Medicine and Rehabilitation*, 96(12): 2194-2200, 2015.

Alsalaheen B, Haines J, Yorke A, Stockdale K, **Broglio SP**, Reliability and concurrent validity of instrumented Balance Error Scoring System using a portable force plate system, *Physician and Sports Medicine*, 43(3): 221-226, 2015.

Parks AC, Moore RD, Wu CT, **Broglio SP**, Covassin T, Hillman CH, Pontifex MB, The association between a history of concussion and variability in behavioral and neuroelectric indices of cognition, *International Journal of Psychophysiology*, 98(3 Pt 1):426-434, 2015.

Williams RM, Puetz TW, Giza CC, **Broglio SP**, Concussion recovery time among high school and collegiate athletes: A meta-analysis, *Sports Medicine*, 45(6):893-903, 2015.

**Broglio SP**, Collins MW, Mayfield RM, Mucha A, Kontos A, Current and emerging rehabilitation for concussion: A review of the evidence, *Clinics in Sports Medicine*, 34:213-231, 2015 (invited).

Guskiewicz KM, **Broglio SP**, Acute sports-related traumatic brain injury and repetitive concussion, *Handbook of Clinical Neurology*, 127:157-172, 2015.

Gibson TB, Herring SA, Kutcher JS, **Broglio SP**, The Impact of State Legislation on Youth Concussions, *JAMA Pediatrics*, 169(2):163-168, 2015.

**Broglio SP** (chair), Cantu RC, Gioia GA, Guskiewicz KM, Kutcher KS, Palm M, Valovich McLeod TC, National Athletic Trainers' Association position statement on the management of sport concussion, *Journal of Athletic Training*, 49(2):245-265, 2014.

Rowson S, Duma SM, Greenwald RM, Beckwith JG, Chu JJ, Guskiewicz KM, Mihalik JP, Crisco JJ, Wilcox BJ, McAllister TW, Maerlender AC, **Broglio SP**, Schnebel B, Andersen S, Brolinson PG, Can helmet design reduce the risk of concussion in football?, *Journal of Neurosurgery*, 120(4):919-922, 2014.

Eckner JT, Kutcher JS, **Broglio SP**, Richardson JK, Effect of sport related concussion on clinically measured simple reaction time, *British Journal of Sports Medicine*; 48(2):112-118, 2014.

Moore RD, **Broglio SP**, Hillman CH, Sport-related concussion and sensory function in young adults, *Journal of Athletic Training*; 49(1): 36-41, 2014.

Moore RD, Hillman CH, **Broglio SP**, The persistent influence of concussive injuries on cognitive control and neuroelectric function, *Journal of Athletic Training*; 49(1): 24-35, 2014.

**Broglio SP**, Martini DN, Kasper L, Eckner JT, Kutcher JS, Estimation of head impact exposure in high school football: Implications for regulating contact practices, *American Journal of Sports Medicine*, 41(12):2877-2884, 2013.

S. P. Broglio Page -5-

Martini D, Eckner JT, Kutcher JS, **Broglio SP**, Sub-concussive head impact biomechanics: Comparing differing offensive schemes, *Medicine and Science in Sports and Exercise*, 45(4):755-761, 2013.

Beckwith JG, Greenwald RM, Chu JJ, Crisco JJ, Rowson S, Duma SM, **Broglio SP**, McAllister TW, Guskiewicz KM, Mihalik JP, Anderson S, Schnebel B, Brolinson PG, Lund B, Collins MW, Timing of concussion diagnosis is related to head impact exposure prior to injury, *Medicine and Science in Sports and Exercise*, 45(4): 747-754, 2013.

Beckwith JG, Greenwald RM, Chu JJ, Crisco JJ, Rowson S, Duma SM, **Broglio SP**, McAllister TW, Guskiewicz KM, Mihalik JP, Anderson S, Schnebel B, Brolinson PG, Lund B, Collins MW, Head impact exposure sustained by football players on days of diagnosed concussion, *Medicine and Science in Sports and Exercise*, 45(4): 737-746, 2013.

Kutcher JS, McCrory P, Davis G, Turner M, Ptito A, Meeuwisse W, **Broglio SP**, What evidence exists for new strategies or technologies in the diagnosis of sports concussion and assessment of recovery?, *British Journal of Sports Medicine*, 47(5), 299-303, 2013 (invited).

**Broglio SP**, Fort R, Concussion and concussion management in the NFL: Pathophysiology and economics, *Florida International University Law Review*, 8:31-48, 2012.

**Broglio SP**, Eckner JT, Kutcher JS, Field based measures of head impacts in high school football athletes, *Current Opinion in Pediatrics*, 24(6):702-708, 2012 (invited).

Pontifex MB, **Broglio SP**, Drollette ES, Scudder MR, Johnson CR, O'Connor PM, Hillman CH, The relation of mild traumatic brain injury to chronic lapses of attention, *Research Quarterly for Exercise and Sport*, 83(4):553-559, 2012.

**Broglio SP**, Eckner JT, Paulson H, Kutcher JS, Cognitive decline and aging: The role of concussive and sub-concussive impacts, *Exercise and Sports Sciences Reviews*, 40(3):138-44, 2012 (invited).

Chen Y, Sutton B, Conway C, **Broglio SP**, Ostoja-Starzewski M, Brain deformation under mild impact: Magnetic resonance imaging based assessment and finite element study, *International Journal of Numerical Analysis and Modeling Series B*, 3(1): 20-35, 2012 (invited).

Wessels KK, **Broglio SP**, Sosnoff JJ, Concussions in wheelchair basketball, *Archives of Physical Medicine and Rehabilitation*, 93: 275-278, 2012.

**Broglio SP**, Surma T, Ashton-Miller JA, High school and collegiate football athlete concussions: A biomechanical review, *Annals of Biomedical Engineering*, 40(1):37-46, 2012 (invited).

Guskiewicz KM, **Broglio SP**, Sport-related Concussion: On-Field and Sideline Assessment, *Physical Medicine and Rehabilitation Clinics of North America*, 22(4):603-617, 2011 (invited).

**Broglio SP**, Eckner JT, Surma T, Kutcher JS, Post-morbid cognitive declines and symptomatology are not related to concussion biomechanics is high school football players, *Journal of Neurotrauma*, 28(10):1-8, 2011.

S. P. Broglio Page -6-

**Broglio SP**, Eckner JT, Kutcher JS, Martini D, Sosnoff JJ, Randolph C, Cumulative head impact burden in high school football, *Journal of Neurotrauma*, 28(10):2069-2078, 2011.

Eckner JT, Sabin MJ, Kutcher JS, **Broglio SP**, Lack of cumulative impact effect on concussion injury threshold, *Journal of Neurotrauma*, 28(10):2079-2090, 2011.

Sabin MJ, Van Boxtel BA, Nohren MW, **Broglio SP**, Presence of headache does not influence sideline neurostatus or balance in high school football athletes, *Clinical Journal of Sports Medicine*, 21(5):411-415, 2011.

**Broglio SP**, Swartz EE, Crisco JJ, Cantu RC. In vivo biomechanical measurements of a football player's C6 spine fracture, *New England Journal of Medicine*, 365(3): 279-281, 2011.

**Broglio SP**, Moore RD, Hillman CH, A history of sport-related concussion on event-related brain potential correlates of cognition, *International Journal of Psychophysiology*, 82(1): 16-23, 2011 (invited).

Martini DN, Sabin MJ, DePesa SA, Leal EW, Negrete TN, Sosnoff JJ, **Broglio SP**, The chronic effects of concussion on gait, *Archives of Physical Medicine and Rehabilitation*, 92(4):585-589, 2011.

Sosnoff JJ, **Broglio, SP**, Sunghoon S, Ferrara MS, Previous mild traumatic brain injury and postural-control dynamics, *Journal of Athletic Training*, 46(1):85-89, 2011.

Vagnozzi R, Signoretti S, Cristofori L, Alessandrini F, Floris R, Isgrò E, Ria A, Marziale S, Ludovici A, Zoccatelli G, Tavazzi B, Amorini AM, Del Bolgia F, Sorge R, **Broglio SP**, McIntosh TK, Lazzarino G, Assessment of metabolic brain damage and recovery following mild traumatic brain injury: a multicentre, proton magnetic resonance spectroscopic study in concussed patients, *Brain*, 133(11):3232-3242, 2010.

**Broglio SP**, Schnebel B, Sosnoff JJ, Shin S, Feng X, He X, Zimmerman J, Biomechanical properties of concussions in high school football, *Medicine and Science in Sports and Exercise*, 42(11):2064-2071, 2010.

**Broglio SP**, Vagnozzi R, Sabin M, Signoretti S, Tavazzi B, Lazzarino G, Concussion incidence and knowledge in Italian football (soccer), *Journal of Sport Science and Medicine*, 9(3):418-430, 2010.

Sabin MJ, Ebersole KT, Martindale AR, Price JW, **Broglio SP**, Balance performance in male and female collegiate basketball athletes: influence of testing surface, *Journal of Strength and Conditioning Research*, 24(8):2073-2078, 2010.

Piland SG, Ferrara MS, Macciocchi SN, **Broglio SP**, Gould T, Investigation of baseline self-report concussion symptom scores, *Journal of Athletic Training*, 45(3):273-278, 2010.

Ellemberg D, Henry LC, Macciocchi SN, Guskiewicz KM, **Broglio SP**, Advances in sport concussion assessment: From behavioral to brain imaging measure, *Journal of Neurotrauma*, 26(12):2365-2382, 2009.August 24, 2015

Pontifex MB, O'Connor PM, **Broglio SP**, Hillman CH, The association between mild traumatic brain injury history and cognitive control, *Neuropsychologica*, 47(14):3210-3216, 2009.

S. P. Broglio Page -7-

**Broglio SP**, Pontifex MB, O'Connor P, Hillman CH, The persistent effects of concussion on neuroelectric indices of attention, *Journal of Neurotrauma*, 26(9):1463-1470, 2009.

**Broglio SP**, Zhu W, Sopiarz K, Kelly MS, Park Y, Generalizability theory analysis of balance error scoring system reliability in healthy young adults, *Journal of Athletic Training*, 44(5):497-502, 2009.

**Broglio SP,** Sosnoff JJ, Ferrara MS, The relationship of athlete-reported concussion symptoms and objective measures of neurocognitive function and postural control, *Clinical Journal of Sports Medicine*, 19(5):377-382, 2009.

**Broglio SP**, Guskiewicz KM, Concussion in sport: The sideline assessment, *Sports Health: A Multidisciplinary Approach*, 1(5):361-369, 2009 (invited).

**Broglio SP**, Sosnoff JJ, Sunghoon S, He X, Alcaraz C, Zimmerman J, Head impacts during high school football: A biomechanical assessment, *Journal of Athletic Training*, 44(4):342–349, 2009.

**Broglio SP**, Monk A, Sopiarz K, Cooper ER, The influence of ankle support on postural control, *Journal of Science and Medicine in Sport*, 12:388–392, 2009.

Gliottoni RC, Meyers JR, Arngrímsson SA, **Broglio SP**, Motl RW, Effect of caffeine on quadriceps muscle pain during acute cycling exercise in low versus high caffeine consumers, *International Journal of Sport Nutrition & Exercise Metabolism*, 19(2):150-161, 2009.

**Broglio SP**, Sosnoff JJ, Rosengren KS, McShane K, A comparison of balance performance: computerized dynamic posturography and a random motion platform, *Archives of Physical Medicine and Rehabilitation*, 90:145-50, 2009.

Sosnoff JJ, **Broglio SP**, Ferrara MS, Cognitive and motor function are associated following mild traumatic brain injury, *Experimental Brain Research* 187(4):563-71, 2008.

**Broglio SP,** Ferrara MS, Sopiarz K, Kelly MS, Reliable change of the Sensory Organization Test, *Clinical Journal of Sports Medicine* 18:148–154, 2008.

**Broglio SP**, Puetz TW, The effect of sport concussion on neurocognitive function, self-report symptoms and postural control: A meta-analysis, *Sports Medicine* 38(1):53-67, 2008.

**Broglio SP**, Ferrara MS, Macciocchi SN, Baumgartner TA, Elliott R, Test-retest reliability of computerized concussion assessment programs, *Journal of Athletic Training* 42(4):509-514, 2007.

**Broglio SP**, Macciocchi SN, Ferrara MS, Neurocognitive performance of concussed athletes when symptom free, *Journal of Athletic Training* 42(4):504-508, 2007.

Sosnoff JJ, **Broglio SP**, Hillman CH, Ferrara MS, Concussion does not impact intra-individual response time variability, *Neuropsychology* 21(6):796-802, 2007.

**Broglio SP**, Macciocchi SN, Ferrara MS, Sensitivity of the concussion assessment battery, *Neurosurgery* 60(6):1050-1057, 2007.

S. P. Broglio Page -8-

**Broglio SP**, Ferrara MS, Piland SP, Anderson B, Concussion history is not a predictor of computerised neurocognitive performance, *British Journal of Sports Medicine* 40(9):802-805, 2006.

Cooper ER, Ferrara MS, **Broglio SP**, Exertional heat illness and environmental conditions during a single football season in the southeast, *Journal of Athletic Training* 41(3):99-103, 2006.

**Broglio SP**, Tomporowski P, Ferrara MS, Balance performance with a cognitive task: A dual-task paradigm, *Medicine and Science in Sport and Exercise* 37(4):689-695, 2005.

**Broglio SP**, Dillon M, Emergency management of head and cervical-spine injuries, *Athletic Therapy Today*, 10(2):24-33, 2005.

Courson R, Clanton M, Patel H, **Broglio SP**, Emergency assessment, *Athletic Therapy Today* 10(2):19-23, 2005.

**Broglio SP**, Guskiewicz KM, Sel, TC, Lephart SM, No acute changes in postural control after soccer heading, *British Journal of Sports Medicine* 38(5):561-567, 2004.

O'Connor P, Motl RW, Ely M, **Broglio SP** Dose-dependent effect of caffeine on reducing leg muscle pain during cycling exercise is unrelated to systolic blood pressure, *Pain* 109:291-298, 2004.

**Broglio SP**, Ju, Y, Broglio MD, Sell TC, The efficacy of soccer headgear, *Journal of Athletic Training* 38(3):220-224, 2003.

Guskiewicz KM, Marshall SW, **Broglio SP**, Cantu RC, Kirkendall DT, No evidence of impaired neurocognitive performance in collegiate soccer players, *American Journal of Sports Medicine* 30(2):157-162, 2002.

**Broglio SP**, Guskiewicz KM, Soccer Heading: Are there risks involved? *Athletic Therapy Today* 6(1): 28-32, 2001.

S. P. Broglio Page -9-

### Refereed and Published Abstracts/Presentations:

Swartz EE, **Broglio SP**, Cook SB, Cantu RC, Ferrara M, Guskiewicz KM, Myers JL, A helmetless tackling training intervention to decrease head impacts in American football. *National Athletic Trainers' Association Annual Meeting and Clinical Symposium*, Baltimore, MD (in press).

Myers JL, Swartz EE, Cook SB, **Broglio SP**, Cantu RC, Ferrara MS, Guskiewicz KM A Comparison of Head Impact Exposure between Football Practice Types, *National Athletic Trainers' Association Annual Meeting and Clinical Symposium*, Baltimore, MD (in press).

Garcia GG, **Broglio SP**, Lavieri M, Quantifying risk thresholds for on-field concussion diagnosis, *Industrial* and *Systems Engineering Research Conference*, Anaheim, CA (in press)

Kerr ZY, Roos KG, Dompier TP, Dalton SL, Djoko A, **Broglio SP**, Marshall SW, Estimating concussion incidence in college sports: Rates, risks, average per team, and proportion of teams with concussions, 2016 World Congress on Brain Injury, Hague, Netherlands (in press).

**Broglio SP**, Williams, RM, O'Connor KL, The effect of restricting full contact football practice on repeated head impact exposure, *American College of Sports Medicine*, Boston, MA (in press).

O'Connor KL, Lapointe A, Galdys M, **Broglio SP**, The effect of concussion on professional ice hockey player performance, *American College of Sports Medicine*, Boston, MA (in press).

Lapointe A, Sosnowski A, Andrews E, Martini DN, **Broglio SP**, Landing kinetics differences in those with and without a concussion history, *American College of Sports Medicine*, Boston, MA (in press).

Dowling MM, Williams RM, O'Connor KL, **Broglio SP**, No significant cognitive changes following season of high school soccer, *American College of Sports Medicine*, Boston, MA (in press).

Martini DN, Eckner JT, Meehan SK, **Broglio SP**, Long-term Effects Of Adolescent Concussion History On Cognition, *American College of Sports Medicine*, Boston, MA (in press).

Niceley MM, Dalton SL, O'Connor K, Roos KG, **Broglio SP**, Dompier TP, Kerr ZY, Concussions sustained in high school student-athletes from 27 sports, 2011/12-2013/14 school years, *2015 Big Sky Athletic Training Sports Medicine Conference*, Big Sky, MT 2016.

**Broglio SP**, Rettmann A, Greer J, Moore B, Brimacombe S, Eckner JT, ERP-based measure of Brain Network Activation (BNA) in concussed and control athletes, *American Academy of Neurology Sport Concussion Conference*, Denver, CO 2015.

Williams RM, Westfall D, O'Connor KL, Rettmann AN, Hillman CH, **Broglio SP**, Pre and post season ERP changes following sub-concussive head impacts during a season of football and the comparison to non-contact controls, *American Academy of Neurology Sport Concussion Conference*, Denver, CO 2015.

O'Connor KL, Eckner JT, Bancroft R, Pohorence M, Kutcher JS, **Broglio SP**, Effect of previous concussion on baseline neurocognitive performance between genders, *American Academy of Neurology Sport Concussion Conference*, Denver, CO 2015.

S. P. Broglio Page -10-

Eckner JT, Rettmann A, Narisetty N, Greer J, Moore B, Brimacombe S, He X, **Broglio SP**, Stability of an ERP-based measure of Brain Network Activation (BNA) in athletes: A new electrophysiological assessment tool for concussions, *American Academy of Neurology Sport Concussion Conference*, Denver, CO 2015.

McAllister TW, McCrea M, **Broglio SP**, The NCAA-DoD Grand Alliance: Concussion Assessment, Research and Education (CARE) Consortium, *Military Health System Research Symposium*, Tampa, FL, 2015.

Sjoquist DJ, Stemper BD, Shah AS, Murtha J, Humm JR, LaRoche A, Pfaller A, **Broglio SP**, Guskiewicz KM, McCrea M, Influence of recent head impact history on biomechanics of concussion sustained in college football athletes, *Summer Biomechanics, Bioengineering and Biotransport Conference*, Snowbird, UT, 2015.

Martini DN, Meehan S, Gates D, **Broglio SP**, A preliminary investigation: long-term effects of concussion on obstacle crossing, *American College of Sports Medicine*, San Diego, CA, *Medicine and Science in Sports and Exercise*, 47(5) S-711, 2015.

Williams RM, Rettmann AR, Almeida AA, **Broglio SP**, Relationship between high school football and neurocognitive changes, *American College of Sports Medicine*, San Diego, CA, *Medicine and Science in Sports and Exercise*, 47(5) S-9, 2015.

Eckner JT, **Broglio SP**, Kutcher JS, Ashton-Miller JA. Is neck girth associated with head impact magnitude in high school athletes? *2015 Association of Academic Physiatrists Annual Meeting*, San Antonio, TX, 2015.

O'Connor KL, Martini DN, **Broglio SP**, Sensitivity and specificity of linear acceleration for concussive injury, *2015 Big Sky Athletic Training Sports Medicine Conference*, Big Sky, MT 2015.

Beckwith JG, Bolander RP, Greenwald RM, Songbai J, McAllister TW, Chu JJ, Crisco JJ, Wilcox BJ, Duma SM, Rowson S, **Broglio SP**, Guskiewicz KM, Mihalik JP, Anderson S, Schnebel B, Brolinson PG, Collins MW, The role of cumulative head impact exposure in differentiating head impacts associated with diagnosed concussion, *World Congress of Biomechanics*, Boston, MA, 2014.

Beckwith JG, Bolander RP, Greenwald RM, Songbai J, McAllister TW, Chu JJ, Crisco JJ, Wilcox BJ, Duma SM, Rowson S, **Broglio SP**, Guskiewicz KM, Mihalik JP, Anderson S, Schnebel B, Brolinson PG, Collins MW, Estimated brain tissue response following impacts associated with and without diagnosed concussion, *Sixth International Symposium on Safety in Ice Hockey*, Toronto, Canada, 2014.

**Broglio SP**, Eckner JT, Giza CC, Guskiewicz KM, Kutcher JS, McCrea M, Effect of a single season of sport participation on clinical neurocognitive outcomes: A comparison of non-contact, contact, and collision sport athletes, *American Academy of Neurology Sports Concussion Conference*, Chicago, IL, 2014.

Martini DN, Mirdami J, Meehan SK, **Broglio SP**, The effects of TMS on neural plasticity in yong adults with a concussion history, *American Academy of Neurology Sports Concussion Conference*, Chicago, IL, 2014.

S. P. Broglio Page -11-

Reams N, Eckner JT, Kutcher JS, Bancroft R, Pohorence M, **Broglio SP**, Effect of prior concussion on baseline neurocognitive function in NCAA athletes, *American Academy of Neurology Sports Concussion Conference*, Chicago, IL, 2014.

Mayfield RM, Rettmann AN, Moore BK, Kutcher JS, **Broglio SP**, Sub-concussive head impact monitoring and the relationship with cognitive functioning, *American Academy of Neurology Sports Concussion Conference*, Chicago, IL, 2014.

Mayfield RM, Rettmann AN, Moore BK, **Broglio SP**, Health related quality of life declines from preseason to mid-season in high school football athletes. *National Athletic Trainers' Association Annual Meeting and Clinical Symposium*, Indianapolis, IN, *Journal of Athletic Training*, 49(3) S-94, 2014.

Martini DN, Meehan SK, **Broglio SP**, Preliminary investigation: Effects of concussion history on visuomotor performance, *American College of Sports Medicine*, Orlando, FL, *Medicine & Science in Sports & Exercise*, 46(5S):16-19, 2014.

Eckner JT, **Broglio SP**, Kutcher JS, Ashton-Miller JA, Use of a novel impact-sensing technology to compare head impact exposure between male and female high school ice hockey athletes: A pilot observational study, *American Academy of Physical Medicine and Rehabilitation*, National Harbor, MD, October 2013.

Martini DN, Scott SM, Weindorf JH, Hudson SR, **Broglio SP**, Long-term upper extremity motor performance following concussion: A preliminary investigation, *National Athletic Trainers' Association Annual Meeting and Clinical Symposium*, Las Vegas, NV, *Journal of Athletic Training*, 48(3) S16, 2013.

Parks AC, Moore RD, **Broglio SP**, Covassin TM, Hillman CH, Pontifex MB, Cognitive load induced response variability in young adults with a history of concussion, *American College of Sports Medicine*, Indianapolis, IN, *Medicine and Science in Sports and Exercise*, 45(5S) 364-365, 2013.

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S. P. Broglio Page -17-

#### **Book Chapters:**

**Broglio SP,** Does recovery following concussion actually follow a typical time course and does this really correspond to resolution of self-reported symptoms?, in <u>Quick Consult in Sports Medicine – Concussion</u>, Valovich-McLeod T (Ed), SLACK, Inc (2015).

**Broglio SP**, Martini DN, Does recovery on clinical tests (eg neurocognitive tests, balance assessments, and symptom reports) represent true recovery of the brain?, in <u>Quick Consult in Sports Medicine – Concussion</u>, Valovich-McLeod T (Ed), SLACK, Inc (2015).

**Broglio SP**, Martini DN, What are the long-term concerns with concussion?, in <u>Quick Consult in Sports Medicine – Concussion</u>, Valovich-McLeod T (Ed), SLACK, Inc (2015).

**Broglio SP**, Martini DN, Do sub-concussive blows place athletes at just as much risk for future negative sequelae as athletes with diagnosed concussions?, in <u>Quick Consult in Sports Medicine – Concussion</u>, Valovich-McLeod T (Ed), SLACK, Inc (2015).

**Broglio SP**, Acute Evaluation and Management of Sport Concussion, in <u>The Oxford Handbook of Sport-related Concussion</u>, Echemendia R, Iverson GL (Eds), Oxford University Press, New York (2014).

**Broglio SP**, Guskiewicz KM, Management of collegiate sport-related concussions, in <u>Concussions in</u> Athletics: From Brain to Behavior, Slobounov SM, Sebastianelli W (Eds), Springer, Livingston, MT (2014).

Macciocchi SN, **Broglio SP**, Symptom validity assessment and sports concussion, in <u>MTBI</u>, symptom validity assessment and malingering, Bush S and Carone D (Eds), Springer Publishing, New York (2012).

S. P. Broglio Page -18-

### **Invited Lectures and Symposium Presentations:**

Repeated head impact exposure in high school football, *National Athletic Trainers' Association Annual Meeting and Clinical Symposium*, part of: The "Impact" of Head Impacts in Sport; Baltimore, MD (June 2016).

When the cheering stops: The after effects of concussion, 6th annual First Coast Sports Injury Symposium & Concussion Update; Jacksonville, FL (April 2016)

Impact mechanics in football athletes, 6th annual First Coast Sports Injury Symposium & Concussion Update; Jacksonville, FL (April 2016)

Is rest best? Concussion recovery, 6th annual First Coast Sports Injury Symposium & Concussion Update; Jacksonville, FL (April 2016)

Just the facts mam: Sport concussion, *National Association of Social Workers - Spring Continuing Education Conference for Social Workers;* Charleston, WV (April 2016).

The soup to nuts of concussion, *National Association of Social Workers - Spring Continuing Education Conference for Social Workers;* Charleston, WV (April 2016).

Life after concussion in college sports, *South by Southwest Conferences and Festivals*; Austin, TX (March 2016).

The CARE data: What is the natural history of concussion, *International Brain Injury Association World Congress on Brain Injury;* The Hauge, Netherlands (March 2016).

Does concussion have an enduring effect? *American Clinical Neurophysiology Society Annual Meeting and Courses*; Orlando, FL (February 2016).

Concussion diagnosis and management update: New data from the CARE Consortium Clinical Study Core, NCAA Safety in College Football Summit; Orlando, FL (February 2016).

Lasting effects of concussion, *Big Sky Athletic Training and Sports Medicine Conference;* Big Sky, MT (February 2016).

Prevention efforts and reducing the risk of concussion: Are we making progress? *Concussions in the Young Athlete VuMedi webinar* (January 2016).

Treatment options for sports-related concussion, *Arizona State University Center for Law: Safeguarding Brains: The Law, Science & Ethics of the Concussive Injury Epidemic;* Tempe, AZ (November 2015).

The NCAA Perspective on the Relationship between Head Trauma and CTE. 2015 International State-of-the-Science meeting on "Does Repeated Blast-Related Trauma Contribute to the Development of Chronic Traumatic Encephalopathy (CTE)?"; McLean, VA (November 2015).

What is the long term risk of concussion? Fact v Fiction, *The University of Delaware Distinguished Scholars Lecture Series*; Newark, DE (November 2015).

S. P. Broglio Page -19-

NCAA-DoD CARE Consortium - A longitudinal investigation, 2015 International Professional Sports Concussion Research Think Tank; London, England (October 2015).

The National Collegiate Athletic Association and Department of Defense Grand Alliance: The Concussion Assessment, Research, and Education (CARE) Consortium, *International Initiative for Traumatic Brain Injury Research (InTBIR) Meeting*; Brussels, Belgium (October 2015).

The NeuroTrauma Research Laboratory: An Overview, *University of Michigan Exercise and Sport Science Institute Symposium*; Ann Arbor, MI (September 2015).

Do concussions have a lasting effect?: What the data tell us, *Michigan State University's Department of Neurology and Ophthalmology Grand Rounds*; Lansing, MI (September 2015).

Prospective cohort research in sports mTBI, *American Academy of Neurology Sport Concussion Conference;* Denver, CO (July 2015).

The science and media of sport concussion, Academy for Sports Dentistry; Chicago, IL (June 2015).

Persistent effects of concussion: How concussive injury during the teen years impacts cognitive and motor performance, *National Summit on Sports Concussion: Sports and Concussion Outcomes;* Los Angeles, CA (June 2015).

Sport concussion update, University of Michigan All Eyes on Concussion; Ann Arbor, MI (May 2015).

Concussion: Does the Science Support the Headlines, *National Association of Social Workers - Spring Continuing Education Conference for Social Workers*; Charleston, WV (April 2015).

Sport Concussion: The forces and vectors of injury, *Dell Children's Medical Center of Texas, Healthy Brain Foundation Annual Concussion Conference;* Austin, TX (April 2015).

Ways to reduce concussion in sports based on biomechanics, *Dell Children's Medical Center of Texas, Healthy Brain Foundation Annual Concussion Conference;* Austin, TX (April 2015).

Sports and Brain Injuries, *University of Michigan Museum of Natural History Science Café;* Ann Arbor, MI (March 2015).

The concussion problem: The NCAA's perspective, *International State-of-the-Science Meeting on the Biomedical Basis for Mild Traumatic Brain Injury (mTBI) Environmental Sensor Threshold Values;* McLean, VA (November 2014).

My Way, University of Michigan Injury Center Research Symposium; Ann Arbor, MI (September 2014).

Balance and concussion, University of Nebraska Concussion Think Tank; Lincoln, NE (September 2014).

Concussion revisited, 2014 Medicine of Cycling Conference; Colorado Springs, CO (August 2014).

Concussion - The science behind the headlines, *Rocky Mountain University of Health Professions;* webinar (August 2014).

S. P. Broglio Page -20-

The fight for evidence-based sports concussion management, *University of Michigan Department of Neurology Grand Rounds;* Ann Arbor, MI (August 2014).

NCAA-DoD: Grand Alliance – Concussion assessment, research and education consortium, *Big Ten/CIC-Ivy League Traumatic Brain Injury Research Collaboration Summit;* Philadelphia, PA (July 2014).

Post-Concussive Syndrome, *American Academy of Neurology, The Sports Concussion Conference;* Chicago, IL (July 2014).

Concussion research findings: What we know about concussion's lasting effects, *University of Michigan Sport Concussion and Emergency Management Symposium*; Ann Arbor, MI (May 2014).

Sport Concussion: Biomechanics to brainwaves, *University of Washington Injury Prevention Center;* Seattle, WA (May 2014).

NATA Position Statement: Management of sport concussion, *Youth Sport Safety Summit;* Washington DC (March 2014).

The role of balance in the concussion assessment paradigm, *Medical Professional eSeminar Series*; webinar (February 2014).

Rest, Recovery & Exercise Post Concussion, *Big Sky Athletic Training and Sports Medicine Conference;* Big Sky, MT (February 2014).

Everything I've leaded about concussions, *University of Michigan 20<sup>th</sup> Annual Physical Education Workshop;* Ann Arbor, MI (December 2013 - Keynote).

Concussive and sub-concussive impacts: Implications for chronic outcomes, *University of Missouri - Kansas City;* Kansas City, MS (November 2013).

Balance assessment: From the athletic field to the battlefield, *National Intrepid Center of Excellence (NICoE);* Bethesda, MD (October 2013).

Hard knocks: What you need to know about concussions, *Michigan Intramural - Recreational Sports Association;* Ann Arbor, MI (October 2013).

Concussion and minimal brain injury, *American Academy of Family Physicians Scientific Assembly;* San Diego, CA (September 2013).

Head impact biomechanics, *University of California at Los Angeles Sports Medicine Grand Rounds;* Los Angeles, CA (September 2013).

The kinetics and kinematics of head impacts, *University of California Neurotrauma Symposium;* Santa Barbara, CA (September 2013).

My rider has a concussion...now what?, 2013 Medicine of Cycling Conference; Colorado Springs, CO (September 2013).

S. P. Broglio Page -21-

Roadside concussion assessment, Interbike Trade Show; Las Vegas, NV (September 2013).

Sport concussion: From bench to bedside, *National Athletic Trainers' Association Continuing Education Webinar;* webinar (September 2013).

The reliability of computerized concussion assessment tools, *Department of Defense Neurocognitive Assessment Tool Workshop*; webinar (August, 2013).

Management of sport concussion, *National Athletic Trainers' Association Annual Meeting and Clinical Symposium;* Las Vegas, NV (June 2013).

Strategies for rehabilitation and consideration for rest, *National Athletic Trainers' Association Annual Meeting and Clinical Symposium*, part of: Sport-related concussion: What more do we know today and where are we making progress?; Las Vegas, NV (June 2013).

Sport concussion in collegiate athletics, *Bowling Green State University Department of Athletics;* Bowling Green, OH (June 2013).

Football impact dynamics: Measuring hits to the head: Brain Trauma Foundation; webinar (June 2013).

Concussion identification and evaluation, USA Cycling: Race Officials' Training; webinar (May 2013).

Concussion and its chronic effects on cognitive function, *Virginia Polytechnic Institute School of Biomedical Engineering and Sciences*; Blacksburg, VA (May 2013).

Concussion biomechanics, *University of Michigan, Department of Physical Medicine and Rehabilitation Thirtieth Annual James W. Rae Scientific Day;* Ann Arbor, MI (May 2013).

Impact biomechanics: Do big and little hits have the same result?, *University of Pittsburgh Department of Orthopedic Surgery Grand Rounds;* Pittsburgh, PA (April 2013).

Concussion identification and evaluation, *USA Cycling: Race Director's Summit;* Colorado Springs, CO (April 2013).

Concussion biomechanics and their role in long term disease, *Chi Epsilon Civil Engineering Honors Society;* Ann Arbor, MI (March 2013).

Concussion management: Updating the National Athletic Trainers' Association Position Statement, *Matthew Gfeller Sport-Related Neurotrauma Symposium;* Chapel Hill, NC (March 2013).

Sport concussion: Making sense out of scrambled eggs, *University of Toledo Sports Medicine Lecture Series;* Toledo, OH (February 2013).

A concussion discussion: Questions and (some) answers, *University of Oregon Department of Human Physiology;* Eugene, OR (February 2013).

A multifaceted approach to concussion assessment, *Big Sky Athletic Training and Sports Medicine Conference*; Big Sky, MT (February 2013).

S. P. Broglio Page -22-

Head impacts and chronic outcomes, *University of Michigan Depression Center Colloquium Series;* Ann Arbor, MI (January 2013).

Concussion assessment tools: Evidence for use, *Medicine of Cycling Conference*; Colorado Springs, CO (August 2012).

Concussion, University of Michigan MedSport Outreach Clinic; Ann Arbor, MI (July 2012).

Concussion and minimal brain injury, *Pennsylvania Academy of Family Physicians;* Annapolis, MD (July 2012).

Use of the Head Impact Telemetry System to understand concussion mechanics, *National Athletic Trainers' Association Annual Meeting and Clinical Symposium;* St. Louis, MS (June 2012).

Biomechanical aspects of concussion, Part of: *Concussions: Practical Management Strategies for Athletic Trainers;* Ann Arbor, MI (May 2012).

Everything you wanted to know about concussions in under 60 minutes, *Rocky Mountain University of Health Professions;* webinar (May 2012).

Sport concussion biomechanics, American Medical Society for Sports Medicine; Atlanta, GA (April 2012).

Managing risks of university athletic programs: Sport concussion, *Michigan Universities Self-Insurance Corporation*; Big Rapids, MI (April 2012).

The biomechanics of concussion, *University of Texas - Arlington Concussion Summit;* Arlington, TX (March 2012).

Concussion research in the interscholastic setting: Current issues, *University of Wisconsin - Madison Athletic Training Education Program Alumni and Friends Celebration;* Madison, WI (February 2012).

Head impact biomechanics: Concussion biomechanics, *Big Sky Athletic Training and Sports Medicine Conference;* Big Sky, MT (January 2012).

Sport Concussion: A biomechanical perspective, part of: Sports Related Head Injuries, 14th European Congress of Neurosurgery; Rome, Italy (October 2011).

Assessing balance following concussion, *Athletic Trainers' Society of New Jersey 2<sup>nd</sup> Annual Sports Concussion Summit;* Plainsboro, NJ (July 2011).

Cognitive and motor functioning following sport related mild traumatic brain injury, *Carle Neuroscience Symposium*; Urbana, IL (April 2011).

Equipment and biomechanical considerations for concussion prevention, *International Olympic Committee World Conference on Prevention of Injury and Illness in Sport*, part of: Prevention of sport-related concussion and long-term effects of recurrent mTBI: Is research driving clinical practice?; Monaco, Monte Carlo (April 2011).

S. P. Broglio Page -23-

A closer look at sport concussion, *United States Youth Soccer Workshop 2011;* Louisville, KY (February 2011).

Concussion Management-Implications for Practice, *Illinois Athletic Trainers' Association Symposium;* Lisle, IL (November 2010 - keynote).

Brain trauma biomechanics: All hits are not created equal, *Southwest Athletic Trainers' Association;* Arlington, TX (July 2010).

Concussion in interscholastic football: Organizing field based research, *Carle Foundation Hospital;* Urbana, IL (November 2009).

The sideline evaluation: A systematic approach, *National Athletic Trainers' Association Annual Meeting and Clinical Symposium*, part of: Sport-related concussion - Navigating the Latest Research Findings and Clinical Recommendations; San Antonio, TX (June 2009).

The relationship between cognitive and postural control performance with self-report concussion symptoms, *National Athletic Trainers' Association Annual Meeting and Clinical Symposium*, part of: The concussion dilemma: Are we headed in the right direction?; San Antonio, TX (June 2009).

Concussion: Transient and persistent outcomes, *National Athletic Trainers' Association Annual Meeting and Clinical Symposium;* San Antonio, TX (June 2009).

The acute and persistent effects of sport concussion, *Catholic University of Rome: Institute of Biochemistry and Clinical Biochemistry;* Rome, Italy (May 2009).

The usefulness of neuropsychological testing in monitoring long term problems, 3<sup>rd</sup> International Conference on Concussion in Sport; Zurich, Switzerland (October 2008).

Special Interest Group: Concussion in Sport, *National Athletic Trainers' Association Annual Meeting and Clinical Symposium;* St Louis, MS (June 2008).

Stability of common computerized tests for concussion assessment, *American College of Sports Medicine*, Featured Science Session: Neuropsychological Assessment of the Concussed Athlete: Only One Piece of the Concussion Puzzle; Indianapolis, IN (May 2008).

Helmet impacts during high school football: A biomechanical assessment, *Big Ten Sports Medicine Meeting;* Chicago, IL (May 2008).

Traumatic brain injury in sport: The Unity High School concussion project, *Illinois High School Association Sports Medicine Meeting;* Bloomington, IL (April 2008).

History of concussion is associated with suppressed neuroelectric activity in young adults, 4th International Meeting on mTBI in Sports; St Moritz, Switzerland (March 2008).

Concussion assessments: Do they measure what we think?, 4th International Meeting on mTBI in Sports; St Moritz, Switzerland (March 2008).

S. P. Broglio Page -24-

Sport Related Concussion: What we know about the acute and chronic effects, *University of Montreal:* Centre de Recherche En Neuropsychologie Expérimentale et Cognition; Montreal, Canada (February 2008).

Concussion in Sport: It's a hard knock life, *Brain and Cognition Seminar*; University of Illinois at Urbana-Champaign, IL (November 2007).

Concussion in sport, *Department of Kinesiology and Community Health Exercise Physiology and Athletic Training Seminar;* University of Illinois at Urbana-Champaign, IL (October 2006).

Bicycling Mechanics, *National Athletic Trainers' Association Annual Meeting and Clinical Symposium;* Atlanta, GA (June 2006).

Concussion testing: The UGAA sport medicine approach, *Georgia Sports Medicine Symposium;* Athens, GA (June 2005).

The concussion discussion: Pre-season testing protocols and post-injury treatment, *Sports Health College and University Sports Medicine Meetings;* Portland, OR (June, 2003).

The concussion discussion: Pre-season testing protocols and post-injury treatment, *Sports Health College and University Sports Medicine Meetings;* Austin, TX (May, 2003).

S. P. Broglio Page -25-

#### **RESEARCH GRANTS AND CONTRACTS**

#### In Review

Joseph JR, **Broglio SP (co-PI / Faculty Sponsor)**, Parmar HA, Evaluating neurocognitive impairment and structural damage on diffusion tensor imaging in high-school football athletes with high-acceleration head impact, *Neurosurgery Resident Education Fund*, \$40,000 2015-2016.

**Broglio SP (co-PI)**, McAllister TW, McCrea M, The National Collegiate Athletic Association - Department of Defense Grand Alliance: Concussion Assessment, Research, and Education (CARE) Consortium, *USA Medical Research Acquisition Activity* (option funding), \$5,000,000; 2016-2017.

### Ongoing

**Broglio SP (co-PI)** Pradhan AK, Bingham R, Persistent effects of concussion on driving, *University of Michigan Office of Research*, \$9,300 2015-2016.

**Broglio SP (co-PI)**, Pradhan AK, Bingham R, Long-term effects of concussion on driving behaviors: A driving simulator evaluation, *University of Michigan Injury Center*, \$15,000 2015-2016.

Eckner JT, Ashton-Miller JA, Conley RS, **Broglio SP (co-I)**, Garton H, Development and validation of a "Gold Standard" *in vivo* head impact sensor, *University of Michigan Injury Center*, \$25,000 2015-2016.

Swartz EE, **Broglio SP (co-PI)**, Prevention of head impacts in football: The HuTT technique (Phase I), National Football League/Under Armour/GE Head Health Challenge II: Innovative Approaches For Identifying And Preventing Brain Injury, \$500,000; 2014-2016.

**Broglio SP (PI)**, The impact of concussive and sub-concussive blows on brain network activity, *The National Institutes of Health: National Institute of Neurological Disorders and Stroke* (3R15NS081691-01S1), \$74,310; 2014-2016.

Swartz EE, **Broglio SP (co-PI)** Prevention of head impacts in American football, *National Athletic Trainers' Association - Research and Education Foundation*, \$47,686; 2014-2016.

**Broglio SP (co-PI)**, McAllister TW, McCrea M, The National Collegiate Athletic Association - Department of Defense Grand Alliance: Concussion Assessment, Research, and Education (CARE) Consortium, *National Collegiate Athletic Association and USA Medical Research Acquisition Activity* (W81XWH-14-2-0151: 14132004), \$22,635,999; 2014-2017.

**Broglio SP (co-PI),** Eckner JT, Giza CC, Guskiewicz KM, Kutcher JS, McCrea M, National sport concussion outcomes study - Phase 1: The role of equipment and head impact exposure on neurological outcomes, *National Collegiate Athletic Association*, \$399,850; 2012-2016.

**Broglio SP (PI),** Kutcher JS, He X, The impact of concussive and sub-concussive blows on brain network activity, *The National Institutes of Health: National Institute of Neurological Disorders and Stroke* (1R15NS081691-01), \$435,212; 2012-2016.

S. P. Broglio Page -26-

#### Completed

**Broglio SP (co-PI),** Meehan SK, The effect transcranial magnetic stimulation (TMS) on neural plasticity in young adults with a concussion history, *University of Michigan Injury Center*, \$24,958; 2013-2015.

**Broglio SP (PI),** Hillman CH, Sosnoff JJ, Concussion across the lifespan: Persistent effects on brain, neurocognitive functioning, and motor control, *National Athletic Trainers' Association - Research and Education Foundation*, \$128,912; 2011-2014.

**Broglio SP (PI)**, Spring/Summer Research Grants Program Application, *Rackham Graduate School, University of Michigan*, \$5045; 2014.

**Broglio SP (PI)**, Spring/Summer Research Grants Program Application, *Rackham Graduate School, University of Michigan* (awarded 2013 - funding returned).

Kutcher JS, Eckner JT, **Broglio SP (CoI)**, Stability and Effect of Concussion on Brain Network Activation Scores, contract with *ElMindA*, *Ltd*, \$677,521; 2011 - 2013.

Eckner JT, Kutcher JS, **Broglio SP (CoI)**, Ashton-Miller JA, A Novel Assessment of Head Impact Biomechanics in Female Athletes, *Women's Sports, Health and Activity Research and Policy (SHARP) Center*, \$15,000; 2011 - 2012.

**Broglio SP (PI),** Imaging the concussed mind: A look at the long term effects of concussion, *Beckman Institute for Advanced Science and Technology*, \$8,000; 2011.

**Broglio SP (PI)**, Graduate Assistant support for the Activities and Recreation Center (ARC) Wellness Center, contract with *Carle Foundation Hospital - Division of Sports Medicine*, \$62,683; 2010 - 2012.

Broglio SP (PI), Head Impact Telemetry Alert Beta Testing, contract with Simbex LLC, \$49,998; 2010.

**Broglio SP (PI),** McAuley E, Kramer A, Cohen NJ, Sutton B, He X, Concussion across the lifespan: A multi-disciplinary assessment of cognitive health, *University of Illinois Health and Wellness Initiative*, \$49,820; 2010 - 2011.

**Broglio SP (PI),** Hillman CH, McAuley E, Mild traumatic brain injury and cognitive health across the lifespan, *University of Illinois at Urbana-Champaign Research Board*, \$12,650; 2009-2012.

**Broglio SP (PI),** Vagnozzi R with Tavazzi B, Lazzarino G, Mild Traumatic Brain Injury: Revealing the 'Silent Epidemic,' *William and Flora Hewlett International Research Grants*, \$3000; 2009.

Ferrara MS, Cooper ER, Powell JW, Casa DJ, **Broglio SP (CoI)**, Monitoring exertional heat illnesses in interscholastic Georgia football, *National Athletic Trainers' Association - Research and Education Foundation*, \$109,006; 2009 - 2011.

Woods JA, **Broglio SP (CoI)**, Kelley KW, Dantzer R, Effects of mild traumatic brain injury (mTBI) on neuroinflammation, cognition, and depression, *The Mary Jane Neer Research Fund for Research in Disability*, \$14,902; 2007 - 2008.

S. P. Broglio Page -27-

**Broglio SP (PI),** Ebersole KT, Rosengren KS, Reliability of postural control assessments, *Great Lakes Athletic Trainers' Association*, \$1200; 2007.

Ferrara MS, Cooper ER, **Broglio SP (Col)**, Powell JW, Casa DJ, Monitoring environmental conditions and injury rates of fall sports, *National Collegiate Athletic Association Committee on Competitive Safeguards and Medical Aspects of Sports*, \$23,144; 2007.

**Broglio SP (PI),** Hillman CH, Association between recurrent concussion and chronic changes in cognitive and neuroelectric indices, *University of Illinois at Urbana-Champaign Research Board*, \$9,175; 2007 - 2008.

Hillman CH, **Broglio SP (CoI)**, Clinical and Neuroelectric Indices of Multiple Concussions, *The Mary Jane Neer Research Fund for Research in Disability*, \$15,000; 2007 - 2008.

**Broglio SP (PI),** Ostoja-Starzewski M, Sutton B, Finite Element Modeling of Brain Deformation from Rapid MRI, *The Mary Jane Neer Research Fund for Research in Disability*, \$14,400; 2006 - 2007.

Ferrara MS, Cooper ER, **Broglio SP (Col)**, Monitoring environmental conditions and injury rates of selected fall sports at NCAA Division III institutions, *National Collegiate Athletic Association Committee (NCAA) on Competitive Safeguards and Medical Aspects of Sports*, \$28,996; 2006.

Ferrara MS, Cooper ER, **Broglio SP (Col)**, Monitoring environmental conditions and injury rates of selected fall sports at NCAA Division III institutions, *National Collegiate Athletic Association (NCAA) Committee on Competitive Safeguards and Medical Aspects of Sports*, \$30,947; 2005.

**Broglio SP (PI)**, The reliability and specificity of computer-based concussion assessment protocols, Louise E. Kindig Research Award, Department of Kinesiology, University of Georgia, \$1,000; 2005 - 2006.

**Broglio SP (PI)**, *Dissertation Completion Assistantship*, University of Georgia Graduate School, \$16,767; 2005 - 2006.

Ferrara MS, Cooper ER, **Broglio SP (Col)**, Monitoring environmental conditions and injury rates of selected fall sports at NCAA Division III institutions, *National Collegiate Athletic Association (NCAA) Committee on Competitive Safeguards and Medical Aspects of Sports*, \$49,500; 2004.

Piland SG, **Broglio SP (CoI)**, Ferrara MS, Investigation of Non-concussed group responses on a measure of self-reported concussion-related symptoms, *Southeast Athletic Trainers' Association Research Grant*, \$750; 2002.

Ferrara MS, Cooper ER, **Broglio SP**, Courson RW, Monitoring environmental conditions at southeastern universities, *National Athletic Trainers' Association - Research and Education Foundation*, \$7,140; 2003.

**Broglio SP (PI),** Ju YY, Broglio MD, Sell TC, The efficacy of soccer headgear, *National Athletic Trainers'* Association - Research and Education Foundation, Osternia Masters Grant, \$1,000; 2001 - 2002.

**Broglio SP (PI),** Guskiewicz, KM, Sell, TC, Lephart, SM, The acute effect of rotational heading on measures of postural stability, *Orthopaedic Research Laboratory Alumni Council: Mrs. Ho-Tung Cheong Research Grant*, \$3,000; 2001 - 2002.

S. P. Broglio Page -28-

#### **SERVICE**

#### **Professional Service**

Journal Associate Editor

Journal of Athletic Training, 2015 to present Special edition on Concussion in Sport, 2015-2016

#### Journal Editorial Boards

Concussion, 2014 to present Journal of Athletic Training, 2009 to 2015 Athletic Training & Sports Health Care, 2008 to present British Journal of Sports Medicine, 2008 to present

# Journal Ad-hoc Reviewer

 American Journal of Sports Medicine (2014 to present)
 Annals of Biomedical Engineering (2011, 2013, 2014) • Archives of Clinical Neuropsychology (2012 to 2014) • Archives of Physical Medicine and Rehabilitation (2007, 2010) • Biology of Sport (2014) • BMC Sports Science, Medicine, & Rehabilitation (2014) •Brain (2009, 2012) • Brain Injury (2014 to present) • British Journal of Sports Medicine (2004 to present) • British Medical Journal (2014) • Clinical Journal of Sports Medicine (2014) • Child Neuropsychology (2010) • Clinical Neurology and Neurosurgery (2013) • Concussion (2015) • Developmental Neuropsychology (2014) • Experimental Brain Research (2013) • International Journal of Exercise Science (2007 to 2014) • JAMA Pediatrics (2014 to present) • International Journal of Sports Medicine (2008) • Journal of ASTM International (2008) • Journal of Adolescent Health (2010) • Journal of Athletic Training (2005 to present) • Journal of Biomechanical Engineering (2013) • Journal of Biomechanics (2011) • Journal of Clinical and Experimental Neuropsychology (2006) • Journal of Exercise Science (2013) • Journal of Motor Behavior (2015) • Journal of Neurological Sciences (2014) • Journal of Neurotrauma (2014) • Journal of Science and Medicine in Sport (2009) • Journal of Sport and Health Science (2012) • Journal of Sport Science and Medicine (2013) • Journal of Sport Rehabilitation (2008, 2009) • Medical Principles and Practice (2011) • Medicine and Science in Sport and Exercise (2008 to present) • Neurocase (2006, 2009) • Neuropsychology (2010, 2011) • Neuropsychology Review (2013) • Neuroscience Letters (2005) • Neurosurgery (2009 to 2012) • New England Journal of Medicine (2015) • Plos One (2014 to present) • Research in Sports Medicine (2013) • Sports Health: A Multidisciplinary Approach (2011) • The Physician and Sports Medicine (2010 to 2014)

### **Grant Reviews**

**Standing Member** 

National Athletic Trainers' Association - Research & Education Foundation Research Grants Committee

> Vice Chair for General Grants, 2014 to present Committee member, 2011 to 2014 Ad hoc reviewer, 2008 to 2011 Free Communications Committee

Committee member, 2013 to present

S. P. Broglio Page -29-

#### Ad-hoc Reviewer

University of Michigan Pediatric Device Consortium, 2015.

Neurological Foundation of New Zealand, 2015.

University of North Carolina Research Opportunities Initiative, 2014.

Canadian Foundation for Innovation, 2013.

Medical College of Wisconsin, Injury Research Center, 2013.

University of Nebraska, Experimental Program to Stimulate Competitive Research (EPSCoR), 2013.

Natural Sciences and Engineering Research Council of Canada, Research Partnership Program, 2012, 2013.

U.S. Army Medical Research & Materiel Command-Military Operational Medicine Research Program (USAMRMC-MOMRP), Physiological Health Portfolio, 2011.

Hewlett International Research Travel Grants, 2010

National Institutes of Health

Challenge Grant (RFA-OD-09-003) Special Panel/Scientific Review Group (ZRG1 BDCN-T(58)R), 2009.

Small Business: Clinical Neurophysiology, Devices, Neuroprosthetics, and Biosensors (10 ZRG1 ETTN-C (10) B), 2015

#### Conferences

Conference Director, 2015 University of Michigan Injury Center Sports Concussion Summit, Ann Arbor, MI, 2015

Co-Organizer, *Think Tank Conference on Sport Concussion*, Lincoln, NE, 2014 Scientific Committee, *American Academy of Neurology - The Sports Concussion Conference*, Chicago, IL, 2014

Faculty and Organization Committee, *Medicine of Cycling Conference*, Colorado Springs, CO, 2013, 2014

Consensus panelist: McCrory P, Meeuwisse W, Johnston K, Dvorak J, Aubry M, Molloy M, Cantu R, Consensus Statement on Concussion in Sport – the 3<sup>rd</sup> International Conference on Concussion in Sport held in Zurich, *Clinical Journal of Sports Medicine*;19(3):185–200, 2009.

Faculty and Organization Committee 4th International Meeting on mTBI in Sports, St Moritz, Switzerland, 2008.

Moderator, *National Athletic Trainers' Association Annual Meeting and Clinical Symposium*, 2001, 2006 to 2011.

### Consulting

Medicine in Cycling

Director of Research, 2015 to present Concussion Task Force, Concussion in Cycling Consensus Statement, 2012

National Institute of Neurological Disorders and Stroke - Clinical Data
Interchange Standards Consortium (NINDS-CDISC) Food and Drug
Administration (FDA) Traumatic Brain Injury Standards, 2014 to 2015

Federal Trade Commission, 2012 to 2013

Concussion Definition Consortium, External Reviewer, 2012

S. P. Broglio Page -30-

National Collegiate Athletic Association - Traumatic brain injury common data elements committee, Indianapolis, IN, 2011 to 2012

Sportsconcussions.org, Advisory Board, Seattle, WA, 2009 to 2011 AthletiCo Sports Medicine and Rehabilitation Clinic, Chicago, IL, 2006 to 2011

# **University Service**

University of Michigan

MiWorkspace Advisory Committee, 2015 to present School of Kinesiology Dean Search Committee, 2015 University Senate Assembly, 2014 to present

# **School / College Service**

University of Michigan: School of Kinesiology

Graduate Committee, 2013 to present

Design Working Group - Classroom Space, 2014 to 2015

Health and Fitness Curriculum Committee, 2011 to 2013

University of Illinois at Urbana-Champaign: College of Applied Health Sciences

Elections and Credentials Committee, 2009 to 2011 Research Computing Task Force, 2009 to 2011

### **Departmental Service**

University of Illinois at Urbana-Champaign

Committee on Course Fees, 2009

Graduate Travel Grant Committee, 2009 to 2011

Elections and Credentials Committee, 2009 to 2011

Athletic Training Faculty Search Committee (co-chair), 2008

Global Campus Committee, 2008

Education Policy Committee, 2007 to 2010

Committee on Wellness, 2007 to 2008

#### PROFESSIONAL ORGANIZATIONS

American College of Sports Medicine, member #640343, 2007 to present National Athletic Trainers' Association, member # 977340, 1997 to present Great Lakes Athletic Trainers' Association, 2006 to present Southeast Athletic Trainers' Association, 2002 to 2006 Eastern Athletic Trainers' Association, 2000 to 2002 Mid-Atlantic Athletic Trainers' Association, 1997 to 2000

#### **CERTIFICATIONS**

National Athletic Trainers' Association Board of Certification, Inc.

Athletic Trainer, Certified # 060002015, 2000 to present

Qualified Examiner, 2001 to 2005

National Athletic Trainers' Association

Certified Clinical Instructor Educator, 2004 to 2011

Approved Clinical Instructor, 2003 to 2011

American Red Cross

CPR/AED for the Professional Rescuer

First Aid

S. P. Broglio Page -31-

#### **LICENSURE**

Michigan, Department of Licensing and Regulatory Affairs, 2601001220, 2013 to present Illinois, Department of Financial and Professional Regulation, 96.002310, 2006 to 2012

### **HONORS AND AWARDS**

- Early Career Award for Important Contributions to the Field of Brain Injury Science, International Brain Injury Association, 2015.
- Outstanding Early Career in Injury Research Award, University of Michigan Injury Center, 2014.
- Fellow of the American College of Sports Medicine, 2014.
- Freddie H. Fu New Investigator Award, National Athletic Trainers' Association Research and Education Foundation, 2010.
- Kenneth L. Knight Award for the Outstanding Research Manuscript, *Journal of Athletic Training*, 2009, for: Broglio SP, Sosnoff JJ, Sunghoon S, He X, Alcaraz C, Zimmerman J, Helmet impacts during high school football: A biomechanical assessment, *Journal of Athletic Training*, 44(4):342–349, 2009.
- Association Media and Publishing Annual EXCEL Awards Bronze Medalist, 2009, for Broglio SP, Sosnoff JJ, Sunghoon S, He X, Alcaraz C, Zimmerman J, Helmet impacts during high school football: A biomechanical assessment, *Journal of Athletic Training*, 44(4):342–349, 2009.
- Phillis J. Hill James Scholar Faculty Award for Exemplary Mentoring University of Illinois, 2009
- Dissertation Award Finalist, NATA-Research and Education Foundation, 2008
- Outstanding Teaching Assistant Award, University of Georgia, 2005
- Graduate Student Scholarship, Southeast Athletic Trainers' Association, 2005
- Oral Presentation Competition Winner Master's Student Research, "The efficacy of headgear," NATA-Research and Education Foundation, 2003
- Oral Presentation Competition Finalist Doctoral Student Research, "Levels of self-reported symtomatology on neuropsychological function and postural control in concussed athletes," NATA-Research and Education Foundation, 2003
- Doctoral Student Scholarship, NATA-Research and Education Foundation, 2003
- Graduate Student Scholarship, Georgia Athletic Trainers' Association, 2003
- Jerry Rhea Sports Medicine Scholarship, Atlanta Falcons, 2001
- Highest Honors graduate, Department of Exercise and Sport Science, University of North Carolina, 2000
- Highest Distinction graduate, College of Arts and Science, University of North Carolina, 2000
- Max Crowder Award, Atlantic Coast Conference, 2000
- William Tessendorf Scholarship, NATA-Research and Education Foundation, 2000
- Phi Beta Kappa, 1999
- National Society of Collegiate Scholars, 1999
- Donald Fauls Memorial Scholarship, NATA-Research and Education Foundation, 1999
- Golden Key National Honor Society, University of North Carolina at Chapel Hill, 1998

updated: January 12, 2016