

Physical Medicine and Rehabilitation

RESEARCH AND TRAINING DETAILS



[Click to view members](#)

Faculty	7
Research Fellows	2
Research Students	8
Support Personnel	10
Direct Annual Grant Support	\$957,022
Direct Annual Industry Support	\$1,230
Peer Reviewed Publications	13

CLINICAL ACTIVITIES AND TRAINING

Clinical Staff	5
Staff Physicians	1
Clinical Fellows	3
Clinical Students	5
Inpatient Encounters	4,281
Outpatient Encounters	4,957

Research Highlights

Brain Injury Research

The Division of Pediatric Physical Medicine and Rehabilitation continues to be a national and international leader in pediatric brain injury research. Researchers within the Division have focused on understanding environmental factors that influence long-term recovery and developing and testing novel management strategies for mild (concussion) to more severe brain injuries. Work from the Division on brain injury has been recognized nationally and internationally.

Shari L. Wade, PhD

Patient-Centered Outcomes Research Institute (PCORI) comparative effectiveness study. This ongoing comparative effectiveness study, funded in August 2014, consists of an evaluation of three family problem-solving therapies focused on reducing behavior problems and improving quality of life following adolescent brain injury. Adolescents from four centers across the country are currently being enrolled in this ground breaking evaluation.

Rehabilitation Research and Training Center for Pediatric TBI Interventions. In the sixth year of the Center, important new findings have been published regarding the efficacy of online family problem-solving therapy for children and adolescents after brain injury and their families. Work from the center has had a national and international impact resulting in funded international collaborations with the [University of Exeter](#) and the [University of Auckland](#).

Ohio Head Injury Outcomes Study. This longitudinal follow-up study, funded by Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD), examines long-term outcomes among children who sustained traumatic brain injuries between the ages of three and seven relative to an age-matched cohort of youth who sustained orthopedic injuries. Preliminary findings support the long-term effects of early brain injury on subsequent academic achievement.

Social Participation and Navigation. Funding from the [US Department of Education's National Institute on Disability and Rehabilitation Research](#) is supporting the development of an app to promote social participation and engagement in youth with brain injury. The impetus for this project came from families of youth with traumatic brain injury (TBI) who were concerned by their child's lack of friendships and social activities. A prototype of the app has been developed and testing of the app is moving into the field.

External Collaborations and Translation. The Division of Physical Medicine and Rehabilitation continues to build research collaborations locally, nationally and internationally. [Dr. Wade](#) continues to work with [Dr. Lindsay Riegler](#) at the [Cincinnati Veterans Affairs Medical Center](#) to translate telehealth interventions developed at Cincinnati Children's for veterans and their families. Psychologists [Dr. Anna Adlam](#) at the [University of Exeter](#) in the United Kingdom and [Dr. Kelly Jones](#) at the [Auckland University of Technology in New Zealand](#) have obtained funding to adapt and test the online problem-solving intervention with adolescents in their countries. These local and international collaborations support the translation and dissemination of the evidence-based intervention programs that have been developed in the Division of Physical Medicine and Rehabilitation at Cincinnati Children's.

Brad G. Kurowski, MD, MS

National Honors: [Dr. Kurowski](#) was awarded the [Early Career Award in Rehabilitation Research](#) at the American Congress of Rehabilitation Medicine (ACRM) meeting in Toronto, ON, Canada.

Genetic and Environmental Influences on Recovery following Traumatic Brain Injury (TBI). [Dr. Kurowski](#) has done some of the only work to date examining the role of genetics in recovery after pediatric traumatic brain injury. Additionally, he has led a team of investigators in using a systems biology informed approach to better understand the contribution of the

exome and genome to recovery after pediatric TBI. Dr. Kurowski's work has been presented at national meetings and is being disseminated for publication. Results have informed the submission of a multicenter (national and international) grant proposal examining the combined influence of genetics and environment on recovery after pediatric brain injury.

Methylphenidate for Attention Problems following Childhood Brain Injury. Dr. Kurowski continues work on his career development award from the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) to conduct a double-blind randomized clinical trial examining the efficacy of methylphenidate for management of attention problems following pediatric TBI. Recruitment and enrollment is progressing. This work will support his development as a clinical trialist, focused on developing better neurorehabilitation strategies.

Aerobic Exercise Intervention for Persistent Post-concussive Symptoms. Through funding from the Ohio Department of Public Safety and Cincinnati Children's Trustee's grant, Dr. Kurowski led a randomized clinical trial examining the efficacy of aerobic exercise in reducing the duration of post-concussive symptoms. In conjunction with Drs. Greg Lee and Kim Cecil, he is also examining changes in cerebral blood flow as the underlying mechanism of treatment response. The study has been completed and the investigators are actively preparing publications.

An Online Intervention for Acute Concussion Symptoms. Drs. Kurowski and Wade, in conjunction with Dr. Lynn Babcock in the Division of Emergency Medicine, conducted a pilot trial of an online intervention for acute concussion management that integrates symptom monitoring with cognitive behavioral strategies for managing symptoms. Findings from this work have been accepted for publication and informed the submission of a follow-up National Institutes of Health (NIH) grant application.

Jilda N. Vargus-Adams, MD, MSc

Cerebral Palsy Research Program. Research initiatives include validation studies of Patient Reported Outcome Measurement Information System (PROMIS) in cerebral palsy (CP) and therapy-based intervention with robotic gait training and functional electrical stimulation. Moreover, pilot work is ongoing to explore magnetoencephalography as an outcome measure in CP, and outcomes of combined transcranial magnetic stimulation and constraint induced movement therapy.

Significant Publications

Backeljauw B, **Kurowski BG**. Interventions for attention problems after pediatric traumatic brain injury: what is the evidence? *PM R*. 2014 Sep;6(9):814-24.

This work summarizes preliminary evidence for the benefit of varying pharmacological and cognitive therapies for attention problems after pediatric traumatic brain injury. However, there is a paucity of definitive evidence available to guide treatment recommendations for attention problems after pediatric TBI. Larger randomized controlled trials and multicenter studies are needed to develop a better evidence-base to guide management in this population.

Karver CL, **Kurowski B**, Semple EA, Stancin T, Taylor HG, Yeates KO, Walz NC, **Wade SL**. Utilization of behavioral therapy services long-term after traumatic brain injury in young children. *Arch Phys Med Rehabil*. 2014 Aug;95(8):1556-63.

This paper is among the first to highlight the failure of many children who sustained early trauma (brain injury or orthopedic injury) to receive the services that they need based on parent-report of behavior problems.

Kurowski B, Pomerantz WJ, Schaiper C, Gittelman MA. Factors that influence concussion knowledge and self-reported attitudes in high school athletes. *J Trauma Acute Care Surg*. 2014 Sep;77(3 Suppl 1):S12-7.

This paper demonstrated that prior education on concussions was less predictive of knowledge about concussions when controlling for other factors such as sport and gender. Older age, female gender, and soccer participation were

more likely to be associated with better self-reported behaviors. Future studies need to focus on development of interventions to improve concussion-specific knowledge and behaviors for high school athletes.

Petranovich CL, **Wade SL**, Taylor HG, Cassedy A, Stancin T, Kirkwood MW, Maines Brown T. **Long-Term Caregiver Mental Health Outcomes Following a Predominately Online Intervention for Adolescents With Complicated Mild to Severe Traumatic Brain Injury**. *J Pediatr Psychol*. 2015 Aug;40(7):680-8.

This paper describes the long-term outcomes of Counselor Assisted Problem Solving on parent mental health. It is noteworthy as being one of the largest randomized clinical trials of a behavioral intervention for brain injury and documenting treatment outcomes a full 12 months following treatment completion. The results support the efficacy of the program in promoting parental mental health among lower-income participants who are at greatest risk for psychological distress.

Vargus-Adams JN, Majnemer A. **International Classification of Functioning, Disability and Health (ICF) as a framework for change: revolutionizing rehabilitation**. *J Child Neurol*. 2014 Aug;29(8):1030-5.

Use of the International Classification of Functioning, Disability and Health promotes improved treatment plans for individual children and for larger programmatic decisions. This article demonstrates how the International Classification of Functioning, Disability and Health has reinvented the language and understanding of childhood disability and rehabilitation.

Division Publications

1. Backeljauw B, Kurowski BG. **Interventions for attention problems after pediatric traumatic brain injury: what is the evidence?**. *PM R*. 2014; 6:814-24.
2. Gass D, Dewire M, Chow L, Rose SR, Lawson S, Stevenson C, Pai AL, Jones B, Sutton M, Lane A, Pruitt D, Fouladi M, Hummel TR. **Pediatric tectal plate gliomas: a review of clinical outcomes, endocrinopathies, and neuropsychological sequelae**. *J Neurooncol*. 2015; 122:169-77.
3. Karver CL, Kurowski B, Semple EA, Stancin T, Taylor HG, Yeates KO, Walz NC, Wade SL. **Utilization of behavioral therapy services long-term after traumatic brain injury in young children**. *Arch Phys Med Rehabil*. 2014; 95:1556-63.
4. Kinnett DG. (2014) **Pediatric Critical Illness Polyneuropathy**. PM&R Knowledge NOW. .
5. Kurowski B, Pomerantz WJ, Schaiper C, Gittelman MA. **Factors that influence concussion knowledge and self-reported attitudes in high school athletes**. *J Trauma Acute Care Surg*. 2014; 77:S12-7.
6. McMahon MA, Pruitt DW, Vargus-Adams JN. **Cerebral Palsy**. In: MA Alexander, DJ Matthews, KP Murphy, eds. *Pediatric Rehabilitation*. New York: Demos Publishing ; 2015:336-372.
7. Petranovich CL, Wade SL, Taylor HG, Cassedy A, Stancin T, Kirkwood MW, Maines Brown T. **Long-Term Caregiver Mental Health Outcomes Following a Predominately Online Intervention for Adolescents With Complicated Mild to Severe Traumatic Brain Injury**. *J Pediatr Psychol*. 2015; 40:680-8.
8. Pruitt DW. **Non-Traumatic Spinal Cord Injury**. In: LC Vogel, K Zebracki, RR Betz, MJ Mulcahey, eds. *Spinal Cord Injury in the Child and Young Adult*. New York: Mac Keith; 2015.
9. Pruitt DW, McMahon MA. **Spinal Cord Injury and Autonomic Crisis Management**. In: RM Kliegman, BF Stanton, JW

St Geme, NF Schor, eds. *Nelson Textbook of Pediatrics*. Philadelphia, PA: Elsevier; 2016:2952-2959.

10. Quatman-Yates C, Hugentobler J, Ammon R, Mwase N, Kurowski B, Myer GD. **The utility of the balance error scoring system for mild brain injury assessments in children and adolescents**. *Phys Sportsmed*. 2014; 42:32-8.
 11. Vargus-Adams J. **Support for the stability of the Alberta Infant Motor Scale after 'back-to-sleep'**. *Dev Med Child Neurol*. 2014; 56:804-5.
 12. Vargus-Adams JN, Majnemer A. **International Classification of Functioning, Disability and Health (ICF) as a framework for change: revolutionizing rehabilitation**. *J Child Neurol*. 2014; 29:1030-5.
 13. Wade SL, Kurowski BG, Kirkwood MW, Zhang N, Cassedy A, Brown TM, Nielsen B, Stancin T, Taylor HG. **Online problem-solving therapy after traumatic brain injury: a randomized controlled trial**. *Pediatrics*. 2015; 135:e487-95.
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Faculty, Staff, and Trainees

Faculty Members

Mary McMahon, MD, Professor

Leadership Division Director; Program Director, Residency Training Program, University of Cincinnati PM&R and Combined Peds/PM&R; Director, Medical Student Education, UC Division of PM&R

Research Interests Outcomes and effectiveness of interventions in muscular dystrophy, spina bifida, brain injury and medical education.

Ashlee Bolger, MD, Assistant Professor

Leadership Associate Program Director, Residency Training Program, University of Cincinnati Combined Peds/PM&R

Research Interests Outcomes and effectiveness of inpatient rehabilitation program, medical education and functional outcomes in children with muscular dystrophy.

Douglas Kinnett, MD, Associate Professor

Leadership Director, Spasticity Management Program

Research Interests Outcomes and effectiveness of interventions for spasticity of cerebral palsy, use of electrodiagnosis in management in birth brachial plexus palsy.

Brad Kurowski, MD, MS, Assistant Professor

Leadership Director, Outpatient Head Injury Clinic

Research Interests Clinical and translational research to better understand neurorecovery and optimize neurorehabilitative approaches for acquired brain injury.

David Pruitt, MD, Associate Professor

Leadership Director, A4Rehab; Program Director, Pediatric Rehabilitation Medicine Fellowship

Research Interests Outcomes and effectiveness of inpatient rehabilitation program for children and functional outcomes in oncology.

Jilda Vargus-Adams, MD, MSc, Associate Professor

Leadership Director, Cerebral Palsy Clinic

Research Interests Outcome measurement and clinical effectiveness in childhood cerebral palsy.

Shari Wade, PhD, Professor

Leadership Director of Research

Research Interests Outcomes and effectiveness of interventions after pediatric traumatic brain injury.

Clinical Staff Members

- **Lainie Holman, MD**

Trainees

- **Jessica Camilleri, DO**, PGY-5, University of Cincinnati College of Medicine
- **Andrew Collins, MD**, PGY-3, University of Medicine and Dentistry of New Jersey
- **Nathan Evanson, MD, PhD**, PGY-5, University of Cincinnati College of Medicine
- **Anna Hung, MA**, PGY-6, Miami University, Oxford Ohio
- **Ashlee Jaffe, MD**, PGY-6, Thomas Jefferson University Hospital
- **Megan Narad, PhD**, PGY-1, University of Cincinnati College of Medicine
- **Francisco Angulo Parker, MD**, PGY-5, University of Kentucky
- **Andrea Paulson, MD**, PGY-4, University of Minnesota Medical School
- **Christina Santia, MD**, PGY-1, Touro College of Osteopathic Medicine New York
- **Julia Smith, BA**, PGY-3, University of Cincinnati College of Medicine
- **Erin Swanson, MD**, PGY-5, Medical College of Wisconsin
- **Amery Treble-Barna, PhD**, Pgy-1, University of Texas, Health Science Center at Houston
- **Melissa Villegas, MD**, PGY-2, University of Wisconsin School of Medicine

Grants, Contracts, and Industry Agreements

Grant and Contract Awards

Annual Direct

Kurowski, B

Efficacy of Methylphenidate for Management of Long-Term Attention Problems after Pediatric Traumatic Brain Injury

National Institutes of Health

K23 HD074683

8/22/2013-7/31/2018

\$121,375

Vargus-Adams, J

Responsiveness of Pediatric PROMIS Item Banks in Children with Cerebral Palsy (CP) Post-Musculoskeletal Surgeries.

National Institutes of Health (Boston University Medical Campus)

U01 AR057929

8/1/2011-7/31/2015

\$3,850

Wade, S

Development of Training Skills for Veterans

Department of Veteran Affairs

4/1/2014-9/30/2015

\$28,602

Comparative Effectiveness of Family Problem-Solving Therapy (F-PST) for Adolescent TBI

Patient-Centered Outcome Research Institute

8/1/2014-7/31/2017

\$627,902

SPAN - A Tool for Social Participation And Navigation

US Department of Education

10/1/2013-9/30/2016

\$175,293

Current Year Direct

\$957,022

Industry Contracts

Kinnett, D

Ispen, US

\$1,230

Current Year Direct Receipts

\$1,230

Total

\$958,252

Online Family Problem-Solving Therapy Can Offset Impact of Traumatic Brain Injury



Shari Wade, PhD

PUBLISHED MAY 18, 2015

Pediatrics

Children and teens who experience traumatic brain injuries (TBI) often struggle with everyday tasks, school performance, jobs and community interactions — and their families also struggle to help them recover and rehabilitate.

The only study to examine the long-term impact of family intervention programs finds that online sessions can result in long-term improvements in child functioning, particularly among families of lower socioeconomic status (SES). The study, led by Shari Wade, PhD, Director of Research in the Division of Physical Medicine and Rehabilitation, appeared May 18, 2015, in *Pediatrics*.

Five centers enlisted 132 TBI teens ages 12-17. Sixty-five were randomly assigned to Counselor-Assisted Problem Solving (CAPS), a six-month, web-based intervention program in which four licensed therapists used web training and follow-up video conference sessions using Skype to train teens and their families in problem-solving, communication and self-regulation techniques. Another 66 teens were assigned to an Internet Resource Comparison (IRC) control group, which involved self-guided, web-based information and resources that families were encouraged to explore at least one hour a week. Both groups were tracked for 18 months.

Although children of lower SES typically have poorer outcomes following brain injury, findings from this study suggests that online problem solving may be especially beneficial for this population. Differences in functioning between the CAPS and IRC families were not evident until 12 months after sessions ended, “suggesting that the effects of problem-solving therapy delivered soon after injury may successfully generalize to the youth’s functioning in everyday settings over time.”

CAPS teens also performed better on tasks outside the home, including at work.

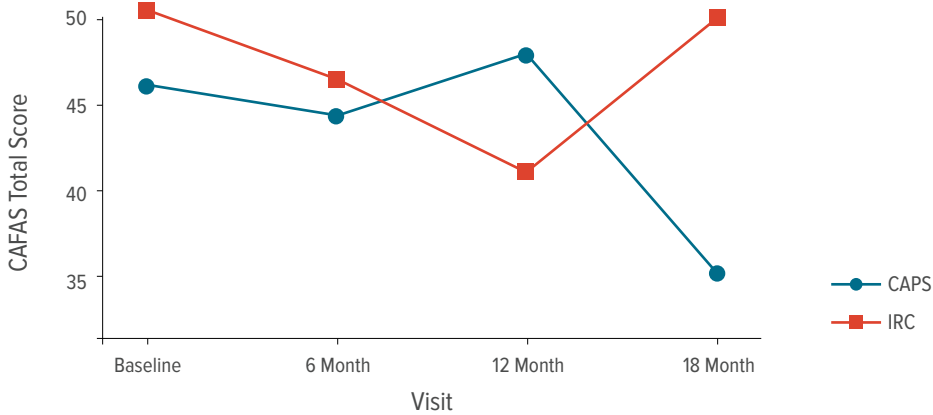
“Given that adolescents with TBI are at risk of deficits in school performance and may have difficulty sustaining employment as they transition into adulthood, improving school and community functioning may be particularly important for long-term success,” said Wade.

RESEARCH AND TRAINING DETAILS

Faculty	7
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Research Students	8
Support Personnel	10
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Direct Annual Industry Support	\$1,230
Peer Reviewed Publications	13

Wade SL, Kurowski BG, Kirkwood MW, Zhang N, Cassidy A, Brown TM, Nielsen B, Stancin T, Taylor HG. Online problem-solving therapy after traumatic brain injury: a randomized controlled trial. *Pediatrics*. 2015;135(2):e487-495.

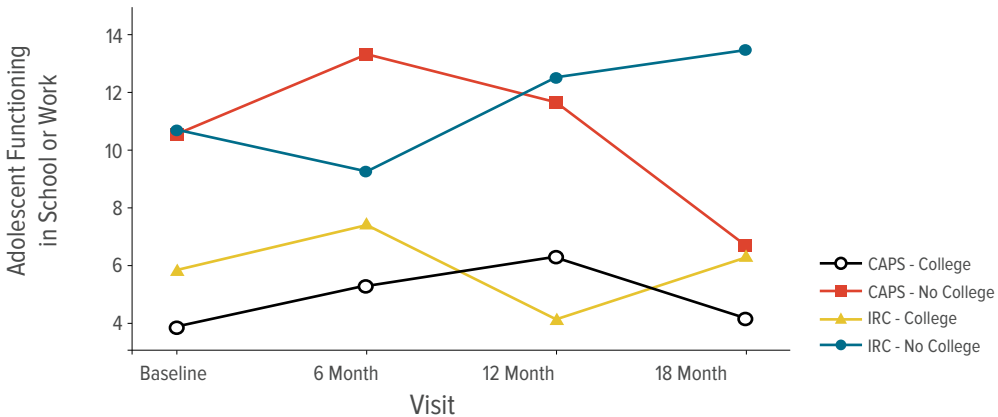
AVERAGE TOTAL CAFAS SCORES OVER TIME BY GROUP



Significant group x visit interaction, $F(3, 301) = 4.18, p = .006$. CAPS group is significantly less than IRC group at visit 4, $p < .05$.

Providing Counselor-Assisted Problem Solving (CAPS) therapy shortly after a traumatic brain injury may result in long-term improvements in child functioning, particularly among families of lower socioeconomic status. Average Child and Functional Assessment Scale (CAFAS) scores (above) indicate a significant group x visit interaction, suggesting that improvements in everyday functioning emerged over time after the intervention. In ratings of school or work functioning (below), there was a significant group x time x caregiver education interaction. Overall, the CAPS group demonstrated significantly better functioning than an internet resource comparison (IRC) group particularly among families with lower levels of education.

RATINGS OF FUNCTIONING AT SCHOOL OR WORK OVER TIME BY GROUP AND PRIMARY CAREGIVER EDUCATION



Significant group x time x caregiver education interaction, $F(3, 315) = 3.26, p = .02$. Post hoc contrasts indicate significant group difference between the low education CAPS and IRC groups at visit 4 $t(351) = -2.20, p = .03$.