

## CURRICULUM VITAE

Beth Crowner PT, DPT, NCS, MPPA

**DATE:** July 2018

**ADDRESS/TELEPHONE:**

*Business:*

Washington University Program in Physical Therapy  
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**PRESENT POSITION:**

Professor of Physical Therapy and Neurology  
Division Director of Clinical Practice  
Program in Physical Therapy  
Washington University School of Medicine

**EDUCATION:**

<u>Degree</u>	<u>Institution</u>	<u>Field</u>	<u>Date</u>
BS	<b>Washington University</b> St. Louis, MO	Physical Therapy	1989
MS	<b>Washington University</b> St. Louis, MO	Physical Therapy	1989
MPPA	<b>University of Missouri</b> St. Louis, MO	Public Policy Administration	1997
DPT	<b>Washington University</b> St. Louis, MO	Physical Therapy	2007

**PROFESSIONAL EXPERIENCE:**

<u>Position</u>	<u>Institution</u>	<u>Dates</u>
Physical Therapist	<b>Christian Hospital Northeast</b> St. Louis, MO	5/89-1/90
Level II Physical Therapist	<b>St. John's Mercy Medical Center</b> St. Louis, MO	1/90-1/93
Senior Physical Therapist	<b>National Rehabilitation Hospital</b> Washington, D.C.	1/93-9/93
Team Leader/Supervisor	<b>St. John's Mercy Medical Center</b> St. Louis, MO	9/93-1/03
Faculty	<b>Washington University School of Medicine</b> Program in Physical Therapy St. Louis, MO	2003-present

**UNIVERSITY POSITIONS AND COMMITTEES:  
COMMITTEES:**

Program in Physical Therapy

Committee on Academic and Professional Evaluation of Students (CAPES) Member	2003-present
Admissions Committee-Professional Curriculum Member	2004-2014
Research Advisory Committee Member	2012-present

School of Medicine

Selection Committee for Distinguished Clinical Faculty Award	2007, 2009
Executive Committee of the Faculty Council (ECFC)-at large representative	2008-2010
-program representative	2012-2015
Diversity and Inclusion Institute for Healthcare	2011-2012

Danforth and School of Medicine Campuses

Diversity and Inclusion: Eliminating Technology Barriers Working Group	2016
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Barnes-Jewish Hospital

Allied Health Professional Committee	2007-2009
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**OTHER PROFESSIONAL ACTIVITY:**

**Service for Washington University School of Medicine**

Mini Medical School	2005
Minority Career Fair	2005-2007
School of Medicine Health Professional Student Leadership Council -Integrated Case Study	2011-2013

**POSITIONS:**

Washington University School of Medicine

Academic Rank

Instructor	Physical Therapy	2003-2007
Assistant Professor	Physical Therapy and Neurology	2007-2012
Associate Professor	Physical Therapy and Neurology	2013-present
Professor	Physical Therapy and Neurology	2017-present

Administrative Position

Division Director of Clinical Practice	Physical Therapy	2007-present
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**LICENSURE/REGISTRATION:**

Missouri Board of Registration for the Healing Arts (No. 01976)	1989-present
Previous licensure in Maryland, Virginia, and the District of Columbia	

**CLINICAL SPECIALIZATION:**

Neurologic Certified Specialist through the American Board of Physical Therapy Specialties; (recertified in 2015)	2005-present
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**EDITORIAL RESPONSIBILITIES:**

**Manuscript Reviewer**

<u>Journal</u> <i>Neurology</i>	2008-present
<i>Journal of Pediatric Neurology</i>	2009-present
<i>Journal of Neurologic Physical Therapy</i>	2009-present

**SCIENTIFIC AND PROFESSIONAL ORGANIZATIONS:**

**American Physical Therapy Association** 1986-present

**American Board of Physical Therapy Specialties**

Specialization Academy of Content Experts (SACE) 2008-2010  
Item writer for the Neurologic Clinical Specialist board examination

**Section Membership**Academy of Neurologic Physical Therapy (Formerly the Section on Neurology -APTA)

Member 2004-present  
Balance and Falls Special Interest Group-Nominating Committee/Chair 2011-2014  
StrokeEDGE taskforce 2010-2011  
Practice Committee 2011-2014  
Board of Directors: Director of Practice (elected 2014; re-elected 2017) 2014-present

Section on Pediatrics (APTA)

Member 2005-2014

Section on Health Policy and Administration (APTA)

Member 2014-present

**Missouri Physical Therapy Association**

Nominating Committee (Eastern District MPTA) 1989-present  
2006-2009

**District of Columbia Physical Therapy Association**

1993

**INVITED PRESENTATIONS:**

“Balance of Power: How to Keep From Falling Down In the Assessment and Documentation of Postural Control”

Crowner BE

Missouri Physical Therapy Association-Eastern District Meeting  
September, 2004

“Recent Research and Practical Applications in Motor Control”

Crowner BE, Earhart GM, and Lang CE

Missouri Physical Therapy Association-Fall Conference  
October 2007

“Incubating Innovation”

Bezner J, Crowner B, Deusinger S, Gandy J, Johnson M, and Wilson J

APTA Combined Sections Meeting-Educational session

February 2010

“StrokEDGE: Report and Recommendations from the Neurology Section Taskforce on Outcome Measurement for Individuals with Stroke”

Sullivan JE, Pinto-Zipp G, Rose D, Kluding P, Nichols D, Crowner B, Yoshida R

APTA Combined Sections Meeting-Educational session

February 2011

## **INVITED PRESENTATIONS:**

“The Vision of Physical Therapy Services in the Emergency Department: Making it a Reality”  
Deusinger SS, McDonnell DA, Wendl PM, Crowner BE, Burlis TL  
APTA Combined Sections Meeting-Educational session  
February 2012

“An Evidence-Based Approach to Examination and Intervention for People with Parkinson’s Disease Across the Continuum of Disability”  
Crowner BE and Duncan RP  
Missouri Physical Therapy Association-Fall Conference  
October 2012

“Neurological Rehabilitation: Strategies for Maximizing Intensity Across the Rehabilitation Continuum”  
Mitchell K, Lang CE, Hayes H, Crowner B, Osborne MB  
APTA Combined Sections Meeting-Educational session  
January 2013

“Neurologic Practice Issues Forum: Selection of objective measures in neurologic rehabilitation- Maximize your skills in coding, motivating patients and detecting change to improve patient outcomes”  
Mitchell K, Studer M, Crowner B; Moore J, Van Der Laan K  
APTA Combined Sections Meeting-Educational session  
February 2014

“Does Medicare Really Cover Maintenance Therapy”  
Brown J, Crowner B, Drummond-Dye R, King T, Studer M  
APTA Combined Sections Meeting-Educational session  
February 2015

“The Dilemma of Balance Rehabilitation: Prescribing the Right Dosage of Difficulty for Each Patient’s Program”  
Crowner B, Espy D, Linder S, Printz C, Studer M  
APTA Combined Sections Meeting-Educational session  
February 2015

“An Evidence-Based Approach to Examination and Intervention for people with Parkinson’s Disease Across the Continuum of Disability”  
Physical Therapy Special Interest Group-Belleville Memorial Hospital  
Crowner B, Duncan R  
August, 2015

“What Is Backward Disequilibrium and How Do I Treat It?”  
Scheets P, Crowner B, Stith J  
APTA Combined Sections Meeting-Educational session  
February 2016

**INVITED PRESENTATIONS:**

“From Theory to Clinical Practice: Using Clinical Practice Guidelines to Implement Evidence Based Care across a Variety of Physical Therapy Settings”  
Crownner BE and Holtzman GW  
Missouri Physical Therapy Association-Fall Conference  
October 2016

“Utilization of Knowledge Translation in Neurologic Physical Therapy Practice”  
Crownner B, Tilson JK, Siles A, Rafferty MR  
APTA Combined Sections Meeting-Educational session  
Accepted for presentation in 2019

“Integrating Current Evidence into Neurologic PT Educational Programs”  
Hornby TG, Crownner BE, Lang CE, Reisman D, Moore JL, Holleran C, Earhart GE, Duncan RP, Morris L  
APTA Combined Sections Meeting-Pre-Conference Course  
Accepted for presentation in 2019

**RESEARCH SUPPORT (GOVERNMENTAL/NON-GOVERNMENTAL):**

## Co-Investigator

Botulinum Toxin’s Effects on Plantar Ulcer Recurrence  
PI: Mary Hastings, PT, DPT, ATC  
Source: NIH; 1R21 HD048972-01  
January 2004-December 2008

## Principal Investigator

The Impact of Botulinum Toxin Injections on Gait, Function, Motor Control and Quality of Life in Children with Cerebral Palsy  
PI: Beth Crownner PT, DPT, NCS, MPPA  
Source: Internal Funding, Program in Physical Therapy, Washington University School of Medicine  
February 2010-2012

## Principal Investigator

Systemic Effects on Strength Following Botulinum Toxin A Injections in Children With Cerebral Palsy  
PI: Beth Crownner PT, DPT, NCS, MPPA  
Source: Internal funding, Department of Neurology and the Program in Physical Therapy, Washington University School of Medicine  
July 2005-June 2007

## Co-Investigator

Botulinum Toxin A for Lower Extremity Spasticity in Children with Cerebral Palsy: a single blinded trial comparing two dilution techniques  
PI: Susan Criswell, MD  
Source: Internal Funding, Program in Physical Therapy, Washington University School of Medicine  
April 2007-2009

## **RESEARCH SUPPORT (GOVERNMENTAL/NON-GOVERNMENTAL):**

Principal Investigator

The Use of Sensory or Motor Cues Using Electrical Stimulation to Reduce Gait Freezing in Patients with Parkinson Disease

PI: Beth Crowner PT, DPT, NCS, MPPA

Source: Internal Funding, Program in Physical Therapy, Washington University School of Medicine  
October 2007-September 2009

## **CLINICAL APPOINTMENTS AND RESPONSIBILITIES:**

### **Washington University School of Medicine-Program in Physical Therapy**

Washington University Physical Therapy Clinics: Physical Therapist 2003-present

*Clinical Responsibilities:* Direct care of patients with neuromuscular conditions;

*Division Director responsibilities:* oversight of clinical operations of the Washington

University Physical Therapy Clinics; strategic planning for the clinical practice;

Integration of the clinical mission with the research and education missions of the Program

## **CLINICAL APPOINTMENTS AND RESPONSIBILITIES:**

### **Washington University School of Medicine-Program in Physical Therapy**

in Physical Therapy; integration of clinical residencies and fellowships within the faculty clinical practice.

### **Washington University School of Medicine-Department of Neurology**

2003-2004

Movement Disorders Clinic: Physical Therapist

*Clinical Responsibilities:* direct care of patients with Parkinson Disease;

consultation with clinic physicians for patients myriad movement disorders.

### **Past Clinical Responsibilities**

Provided direct patient care in large teaching hospitals across the continuum of care; participation in interdisciplinary patient evaluation, management, and discharge planning; supervisory oversight of physical, occupational, speech, and recreation therapy in the acute and inpatient rehabilitation at St. John's Mercy Medical Center.

## **TEACHING RESPONSIBILITIES:**

### **Current Teaching Responsibilities**

#### Professional Clinical Doctorate (DPT) Curriculum (WUSM)

Organizational and Management Issues (PT 651)

Course Master: 2003-present

3 Credit hours

Essential Clinical Skills I (PT 603)

Lecturer: 2007-present

Course Master or Assistant: 2003-2007

4 Credit hours

Diagnosis and Management of Neuromuscular Conditions I (PT 629)

Course Master: 2013-present

2 Credit hours

Diagnosis and Management of Neuromuscular Conditions II (PT 643)  
Course Master: 2014-2018; Course Assistant 2018-present  
4 credit hours

Current participation in selected other courses for the professional clinical doctorate curriculum:  
Case Integration I (PT 628), Case Integration II (PT 642), Case Integration III (PT 654), and Diagnosis and Management of Musculoskeletal Conditions I (PT 614), Professional Issues and Skills Development I (PT602), Professional Issues and Skills Development III (PT635), Professional Issues and Skills Development IV (PT 655), and Health Fitness and Prevention (PT653)

#### PhD in Movement Science

Dissertation Reviewer

“Biomechanical and Neural Factors Associated with Gait Dysfunction and Freezing in People with Parkinson Disease”-Daniel Peterson; 2013

“Motor adaptation and automaticity in people with Parkinson’s disease and freezing of gait”; Sam Nemanich; 2016

### **TEACHING RESPONSIBILITIES:**

#### **Past Teaching Responsibilities**

##### Professional Clinical Doctorate (DPT) Curriculum (WUSM)

Participation in, and coordination of, lecture and laboratory courses focused on safe handling and basic exercise strategies with wide array of patients; clinical education team member: clinical experience mentor and advisor for professional students during full time and part time clinical clerkships and internship. (2003-2007)

Diagnosis and Management of Neuromuscular Conditions (PT 639)

Lecturer and Lab Assistant: 2003-2006

Course Master: 2007-2013

4 Credit hours

##### Post-Professional Clinical Doctorate

Dynamics of the Healthcare System (M22 640)

Lecturer 2007 and 2011

Independent Study (M22 500):

“Advanced Topics in Physical Therapy Professional Practice”-Toby Kinney; 2008

“Use of Gait Velocity and Distance Measures to Predict Functional Independence in Patients with Stroke”-Merri Leigh Johnson; 2008

“Outcome Measures Use and Implementation for Individuals following Spinal Cord Injury”-Stacy Kinstler; 2010

“Efficacy of respiratory exercises and assisted technology in improving pulmonary function and cough production in patients with spinal cord injury”-Melanie Orell; 2012

Capstone Project (M22 820)

“Effects of the Wii and Wii Fit on Outcomes in an Individual with Chronic Stroke”-Jennifer Wang; 2009

“Heterotopic Ossification in Burn Injury: Risk factors, Prevention, and Surgical Outcomes”-Melanie Orell; 2013

## **PUBLICATIONS:**

### **Manuscripts-Peer Reviewed**

Criswell, SR, **Crowner BE**, Racette BA. The use of botulinum toxin therapy for lower-extremity spasticity in children with cerebral palsy. *Neurosurg Focus*. 2006; 21(2):1-7.

**Crowner BE**, Brunstrom JE, Racette BA. Iatrogenic botulism in a pediatric patient due to a therapeutic botulinum toxin A injection. *Clin Neuropharmacol*. 2007; September/October; 30(5): 310-313.

Willis AW, **Crowner BE**, Brunstrom JE, Racette BA. High dose botulinum A toxin for the treatment of lower extremity hypertonicity in children with cerebral palsy. *Dev Med Child Neurol*. 2007; 49(11): 818-822.

**Crowner BE**. Cervical dystonia: disease profile and clinical management. *Phys Ther*. 2007; 87(11) 1-16.

**Crowner BE** and Racette BA. A prospective study of remote effects of botulinum toxin A in cerebral palsy. *Pediatr Neurol*. 2008; 39(4):253-8.

**Crowner BE**, Torres-Russotto D, Carter A, Racette BA. Systemic weakness after therapeutic injections of botulinum toxin A: a case series and review of the literature. *Clin Neuropharmacol*. 2010; 33(5): 243-7.

Leddy A, **Crowner BE**, Earhart GM. Functional Gait Assessment and Balance Evaluation System Test: reliability, validity, and fall risk assessment for individuals with Parkinson disease. *Phys Ther*. 2011; 91(1): 102-13.

Leddy A, **Crowner BE**, Earhart GM. Utility of the Mini-BESTest and BESTest sections for balance assessments in Parkinson Disease. *J Neurol Phys Ther*. 2011; 35(2): 90-7.

Hastings MK, Mueller MJ, Sinacore Dr, Strube MJ, **Crowner BE**, Johnson JE, Racette BA. Botulinum toxin effects on gastrocnemius strength and plantar pressure in diabetics with peripheral neuropathy and forefoot ulcerations. *Foot Ankle Int*. 2012; 33(5): 363-70.

Sullivan JE, **Crowner BE**, Kluding PM, Nichols D, Rose D, Yoshida R, Pinto-Zipp G. Outcome measures for individuals with stroke: process and recommendations from the American Physical Therapy Association neurology section task force. *Phys Ther*. 2013; 93(10): 1383-96.

Harris-Hayes M, Willis AW, Klein SE, Czuppon SC, **Crowner B**, Racette BA. Relative Mortality in United States Medicare Beneficiaries with Parkinson Disease and Hip and Pelvic Fractures. *J Bone Joint Surg*. 2014; 96: e27: 1-7.

Deusinger SS, **Crowner BE**, Burlis TL, Stith JS. Meeting contemporary expectations for physical therapists: imperatives, challenges, and proposed solutions for professional education. *J Phys Ther Educ*. 2014; 28 (1): 56-61.

Scheets PL, Sahrman SA, Norton BJ, Stith JS, **Crowner BE**. What is Backward Disequilibrium and How Do I Treat It?: A Complex Patient Case Study. *J Neurol Phys Ther*. 2015; 39(2): 119-26.



### **Manuscripts-Non peer-reviewed**

**Crowner B**, Bland MD. Home Exercise Program. *A Compendium for Teaching Professional Level Physical Therapy Neurologic Content, V. 2016; Academy of Neurologic Physical Therapy, American Physical Therapy Association.*

**Crowner B**, Bland MD. Intervention Assignment. *A Compendium for Teaching Professional Level Physical Therapy Neurologic Content, V. 2016; Academy of Neurologic Physical Therapy, American Physical Therapy Association.*

### **Abstracts**

**Battock BE**, Brown MB. (1988) Does Habitual Physical Activity Affect Aging?  
APTA Annual Conference, Las Vegas, NV

**Crowner BE**. (2007) Systemic Effects on Strength Following Botulinum Toxin A Injections in Children with Cerebral Palsy. APTA Combined Sections Meeting, Nashville, TN

### **Abstracts**

**Crowner BE**. (2007) A Web-enabled Database: A Novel Application to Enhance Efficiency and Management of Clinical Education. APTA Annual Conference, Denver, CO

Leddy A, **Crowner BE**, Earhart GM. (2010) Balance Assessment in Parkinson Disease: the BESTest and the Mini-BESTest. Accepted for presentation at the 2<sup>nd</sup> World Parkinson Congress in Glasgow, Scotland, UK, *Mov Disord*; 25(Suppl 3): S684.

Leddy AL, **Crowner BE**, Earhart GM. (2011) Comparative analysis of balance measures in Parkinson disease. APTA Combined Sections Meeting, New Orleans, LA.

Leddy AL, **Crowner BE**, Earhart GM. (2010) Functional Gait Assessment and Balance Evaluation System Test: reliability, validity, and fall risk assessment for individuals with Parkinson disease. Missouri Physical Therapy Association Meeting, St. Louis, MO

Hastings MK; Mueller MJ, Sinacore DR, **Crowner B**, Bohnert KL, Johnson JE, Racette B. (2011) Botulinum Toxin Effect on Plantarflexor Muscle Strength and Plantar Pressure. APTA Combined Sections Meeting. New Orleans, LA. 2011. *Journal of Orthopaedic and Sports Physical Therapy*. 2011; 41(1): A31.

Wang J and **Crowner BE**. (2010) Effects of the Wii and Wii Fit on Outcomes in an Individual with Chronic Stroke. APTA Combined Sections Meeting, San Diego, CA

Tilson JK, MacDowell S, **Crowner B**, Dannenbaum L, D'Silva L, Farrell L, Roth RH, Skop K. (2017) Building Capacity for Dissemination and Implementation of CPG's Published by Non-profit-Non-governmental Organizations in the United States. 8<sup>th</sup> International Conference of EBHC Teachers and Developers. Taormina Italy

## **PUBLICATIONS:**

### **Abstracts**

**Crowner BE.** (2007) A Web-enabled Database: A Novel Application to Enhance Efficiency and Management of Clinical Education. APTA Annual Conference, Denver, CO

Leddy A, **Crowner BE**, Earhart GM. (2010) Balance Assessment in Parkinson Disease: the BESTest and the Mini-BESTest. Accepted for presentation at the 2<sup>nd</sup> World Parkinson Congress in Glasgow, Scotland, UK, *Mov Disord*; 25(Suppl 3): S684.

Leddy AL, **Crowner BE**, Earhart GM. (2011) Comparative analysis of balance measures in Parkinson disease. APTA Combined Sections Meeting, New Orleans, LA

Leddy AL, **Crowner BE**, Earhart GM. (2010) Functional Gait Assessment and Balance Evaluation System Test: reliability, validity, and fall risk assessment for individuals with Parkinson disease. Missouri Physical Therapy Association Meeting, St. Louis, MO

Hastings MK, Mueller MJ, Sinacore DR, **Crowner B**, Bohnert KL, Johnson JE, Racette B. (2011) Botulinum Toxin Effect on Plantarflexor Muscle Strength and Plantar Pressure. APTA Combined Sections Meeting. New Orleans, LA. 2011. *Journal of Orthopaedic and Sports Physical Therapy*. 2011; 41(1): A31.

Wang J, **Crowner BE.** (2010) Effects of the Wii and Wii Fit on Outcomes in an Individual with Chronic Stroke. APTA Combined Sections Meeting, San Diego, CA

### **Commentaries**

Cornbleet S, Burlis T, **Crowner B**, Caldwell C. Letter to Editor entitled "The Prize and the Prejudice." *Pediatric Physical Therapy*. 2003; 15(4): 263.

## **CONTINUING EDUCATION /CONFERENCES:**

### **Conferences Attended**

IV STEP: Prevention, Prediction, Plasticity, Participation  
Academy of Pediatric Physical Therapy and Academy of Neurologic Physical Therapy  
American Physical Therapy Association  
2016

Annual Scientific Meeting  
American Physical Therapy Association  
1988, 2007-2015

Combined Sections Meeting  
American Physical Therapy Association  
2007-2016

III STEP  
Section on Pediatrics and Neurology Section  
American Physical Therapy Association  
2005

## **CONTINUING EDUCATION /CONFERENCES:**

### **Conferences Attended**

National Clinical Education Conference  
American Physical Therapy Association  
2004

### **Topic: General Rehabilitation**

Muscle Energy Techniques for the Lower Quadrant  
The Unstable Shoulder: Examination and Intervention  
Lymphedema Management  
Comprehensive Strategies for the Rehabilitatively and Medically Complex Geriatric Patient  
Diagnosis and Treatment of Movement Impairment Syndromes Upper Quarter- Level I  
Shoulder Impingement and the Rotator Cuff: Ultrasound and Movement Analysis  
Exercise and Functional Training in Patients with Osteoarthritis

### **Topic: General Rehabilitation**

Structural and Metabolic Correlates with Muscle Function  
Perspectives on the Management of Back Pain

### **Topic: Neurology and Rehabilitation**

Assessment and Intervention for Balance Dysfunction  
Introduction to NDT: Achieving Functional Outcomes for Adults with Hemiplegia  
Rehabilitation Considerations in Botulinum Toxin Therapy  
Pediatric Partial Weight Bearing Gait Course and Lab  
Locomotor Training after Central Nervous System Injury  
The Role of the Cerebellum and the Basal Ganglia in Movement Disorders  
III Step Symposium on Translating Evidence Into Practice: Linking Movement Science and Intervention  
Comprehensive Concussion Management: "Need to Know" Information for Physical Therapists  
IV STEP: Prevention, Prediction, Plasticity, and Participation

### **Topic: Health Policy**

Health Policy/Healthcare Reform, Where are we now and how did we get there?  
The Future of Healthcare Reform  
Emerging Issues in Medicare, What every PT Needs to Know to Comply with Regulations  
APTA State Policy & Payment Forum  
Innovation Summit: Collaborative Care Models

### **Topic: Research and Clinical Practice**

Necessary Elements in the Fundamentals of Human Studies Research  
Optimizing Patient Outcomes

### **Topic: Clinical Education**

National Clinical Education Conference  
Washington University Clinical Instructor's Meeting  
Groundbreaking Clinical Education: Jump Start and Recharge Your Clinical Experiences With Students

**Community Activities**

Coach for cerebral palsy basketball clinic for children ages twelve and up; 2001-2003  
St. Louis Children's Hospital-Cerebral Palsy Center

**Community Education**

Invited presentation to national meeting for Huntington's Disease 2004  
Invited presentation to regional support group for Huntington's Disease 2006  
Provided a talk to a national audience of patient's families and clinicians 2006  
on the role of physical therapy intervention in Progressive Supranuclear Palsy  
Participated in the creation/filming of an educational video for assessment 2011  
and treatment of individuals with Parkinson disease (APDA)  
Creation of newsletter article for the APDA on treating freezing of gait 2015  
Created a newsletter article for the APDA on exercise and fall prevention 2017  
Provided community talk on fall prevention at Delmar Gardens 2017  
Provided community talk to support group for patients with ataxia on the role 2018  
of physical therapy and exercise