

Rita Patterson, PhD  
Family Medicine and Osteopathic Manipulative Medicine  
Texas College of Osteopathic Medicine  
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## Area of Expertise

Dr. Patterson's research focuses on musculoskeletal function and its role in human performance. Her biomedical engineering perspective affords critical insight to a collaborative team of physicians, basic scientists, physical therapists, and engineers evaluating rehabilitation treatments associated with abnormal motion. Unique to her research is use of video motion capture, point of care data, and computational modeling.

## Qualifications

BS in Engineering Science, Baylor University  
MEng in Biomedical Engineering, Texas A & M University  
PhD in Biomedical Science, University of Texas Medical Branch at Galveston

## Recent Publications

### **Characterizing goal-directed whole-body movements in autistic children and children with developmental coordination disorder**

Fears, N. E., Hirsch, S. B., Tamplain, P. M., Templin, T. N., Sherrod, G. M., Bugnariu, N., Patterson, R. & Miller, H. L., Jun 2024, In: Research in Autism Spectrum Disorders. 114, 102374.

### **Effects of Intersectionality Along the Pathway to Diagnosis for Autistic Children With and Without Co-occurring Attention Deficit Hyperactivity Disorder in a Nationally-Representative Sample**

Miller, H. L., Thomi, M., Patterson, R. M. & Nandy, K., Sep 2023, In: Journal of Autism and Developmental Disorders. 53, 9, p. 3542-3557 16 p.

### **Autistic Children Use Less Efficient Goal-Directed Whole Body Movements Compared to Neurotypical Development**

Fears, N. E., Templin, T. N., Sherrod, G. M., Bugnariu, N. L., Patterson, R. M. & Miller, H. L., Jul 2023, In: Journal of Autism and Developmental Disorders. 53, 7, p. 2806-2817 12 p.

### **Motor differences in autism during a human-robot imitative gesturing task**

Fears, N. E., Sherrod, G. M., Blankenship, D., Patterson, R. M., Hynan, L. S., Wijayasinghe, I., Popa, D. O., Bugnariu, N. L. & Miller, H. L., Jun 2023, In: Clinical Biomechanics. 106, 105987.

### **Community-based postural control assessment in autistic individuals indicates a similar but delayed trajectory compared to neurotypical individuals**

Fears, N. E., Sherrod, G. M. C., Templin, T. N., Bugnariu, N. L., Patterson, R. M. & Miller, H. L., Mar 2023, In: Autism Research. 16, 3, p. 543-557 15 p.

### **Correction: Effects of Intersectionality Along the Pathway to Diagnosis for Autistic Children With and Without Co-occurring Attention Deficit Hyperactivity Disorder in a Nationally-Representative Sample (Journal of Autism and Developmental Disorders, (2022), 10.1007/s10803-022-05604-0)**

Miller, H. L., Thomi, M., Patterson, R. M. & Nandy, K., Mar 2023, In: Journal of Autism and Developmental Disorders. 53, 3, p. 1300 1 p.

### **Normalized Kinematic Walking Symmetry Data for Individuals Who Use Lower-Limb Prostheses: Considerations for Clinical Practice and Future Research**

Finco, M. G., Moudy, S. C. & Patterson, R. M., 1 Jan 2023, In: Journal of Prosthetics and Orthotics. 35, 1, p. E1-E17

### **Movement smoothness during dynamic postural control to a static target differs between autistic and neurotypical children**

Miller, H. L., Templin, T. N., Fears, N. E., Sherrod, G. M., Patterson, R. M. & Bugnariu, N. L., Jan 2023, In: Gait and Posture. 99, p. 76-82 7 p.

### **Development of Soft Pneumatic Actuator Based Wrist Exoskeleton for Assistive Motion**

Singh, I., Erel, V., Gu, Y., Lindsay, A. R., Patterson, R. M., Swank, C. & Wijesundara, M. B. J., 2023, *2023 IEEE/ASME International Conference on Advanced Intelligent Mechatronics, AIM 2023*. Institute of Electrical and Electronics Engineers Inc., p. 359-366 8 p. (IEEE/ASME International Conference on Advanced Intelligent Mechatronics, AIM; vol. 2023-June).

### **Predicting UPDRS Motor Symptoms in Individuals With Parkinson's Disease From Force Plates Using Machine Learning**

Exley, T., Moudy, S., Patterson, R. M., Kim, J. & Albert, M. V., 1 Jul 2022, In: *IEEE Journal of Biomedical and Health Informatics*. 26, 7, p. 3486-3494 9 p.

## **Sponsored Projects**

### **2010 Summer Bioengineering Conference**

Patterson, R. (PI)  
National Science Foundation  
15/04/10 → 31/03/11

### **2010 Summer Bioengineering Conference**

Patterson, R. (PI)  
NIBIB: National Institute on Biomedical Imaging and Bioengineering  
10/03/10 → 28/02/11

### **2010 Summer Bioengineering Conference**

Patterson, R. (PI) & PATTERSON, R. M. (PI)  
National Institute of Biomedical Imaging and Bioengineering  
10/03/10 → 28/02/11

### **2010 Summer Bioengineering Conference**

Patterson, R. (PI)  
10/03/10 → 28/02/11

### **Development of a novel device**

Patterson, R. (PI)  
NIDDK: Diabetes & Digestive & Kidney  
25/02/25 → 31/01/27

### **Effects of OMT on Gait Kinematics and Postural Control in Parkinson Disease**

Hensel, K. (PI), Patterson, R. (Col), Bugnariu, N. (Col), Mason, D. (Col), Seals, R. (Col) & Quiben, M. (Col)  
American Osteopathic Association  
1/09/16 → 31/08/18

### **Evaluation of a More Sensitive Measure for Prediction of Changes in Dynamic Postural Stability and Fall Risk**

Patterson, R. (PI), Knebl, J. (Col) & Bugnariu, N. (Col)  
Intramural Research(UNTHSC)  
1/07/16 → 31/12/17

### **Functional Performance and Evaluation of Dynamic Response Feet**

Bugnariu, N. (PI) & Patterson, R. (Col)  
American Orthotic & Prosthetic Assn  
1/09/13 → 31/08/14

### **Good Hearing, Steady Feet - Developing Auditory Devices that Improve Hearing and Decrease the Risk for Falls**

Bugnariu, N. (PI) & Patterson, R. (Col)  
Intramural Research(TxMED)  
1/05/12 → 31/08/14

**Human Movement Performance Laboratory Equipment Upgrade**

Patterson, R. (PI) & Bugnariu, N. (Col)  
Intramural Research(UNTHSC)  
1/01/17 → 31/12/17

**Maintaining Balance in Conditions of Sensory Conflicts: The Impact of Individual Perceptual Style on Mechanisms of Control**

Bugnariu, N. (PI), Knebl, J. (Col) & Patterson, R. (Col)  
Intramural Research(UNTHSC)  
15/01/10 → 30/11/11

**Motion Assisted Exoskeleton with Virtual Reality (MAVHEXO) for Post-Stroke Rehabilitation**

Patterson, R. (PI) & Bugnariu, N. (Col)  
Neurological Rehab Virtual Reality, LLC  
1/02/19 → 31/01/20

**Multi-Model Skin and Garments for Healthcare and Home Robots**

Bugnariu, N. (PI) & Patterson, R. (Col)  
University of Texas at Arlington  
1/10/12 → 31/05/17

**New Manufacturing Innovations in Lower Limb Prosthetics**

Dombroski, R. T. (PI) & Patterson, R. (Col)  
Mentis Sciences, Inc.  
1/06/16 → 30/09/17

**New Manufacturing Innovations in Lower Limb Prosthetics**

Dombroski, R. T. (PI) & Patterson, R. (Col)  
Mentis Sciences, Inc.  
1/06/16 → 30/09/17

**Osteopathic Management of Leg Length Inequality with Heel Lift Therapy: Analysis of Altered Gait Kinematics**

Mason, D. (PI) & Patterson, R. (Col)  
Intramural Research(UNTHSC)  
1/04/14 → 31/08/15

**Predicting Prospective Falls in Individuals Using Unilateral Lower-Limb Prostheses**

Patterson, R. (PI)  
American Orthotic and Prosthetic Assoc  
1/12/21 → 30/11/22

**Soft-Robotic Glove for Cerebral Palsy Hand Rehabilitation (REHAB Glove)**

Patterson, R. (PI) & Bugnariu, N. (Col)  
National Science Foundation  
1/09/16 → 31/08/19

**Soft-Robotic Glove for Cerebral Palsy Hand Rehabilitation (REHAB Glove)**

Patterson, R. (PI)  
National Science Foundation  
1/09/16 → 31/08/19

**Soft-Robotic Glove for Cerebral Palsy Hand Rehabilitation (REHAB Glove)**

Patterson, R. (PI)  
National Science Foundation  
1/09/16 → 31/08/19

**Stiffness Evaluation of Shoulder Disability**

Connors, M. (PI) & Patterson, R. (Col)

Intramural Research(UNTHSC)

1/07/11 → 31/12/12

**The Dorsal Wrist: Function in the Normal & Injured State**

Patterson, R. (PI), PATTERSON, R. M. (PI), PATTERSON, R. M. (PI) & PATTERSON, R. M. (PI)

National Institute of Arthritis and Musculoskeletal and Skin Diseases, National Institutes of Health

1/01/05 → 31/12/09

**The Dorsal Wrist: Function in the Normal & Injured State**

Patterson, R. (PI) & PATTERSON, R. M. (CoPI)

1/01/05 → 31/12/09

**Use of Torque Range of Motion Device to Teach Evaluation of Somatic Dysfunction**

Patterson, R. (PI)

Intramural Research(UNTHSC)

1/03/14 → 31/12/15

**Utilizing Technology and AI Ap**

Patterson, R. (PI), Knebl, J. (Col), Fulda, K. (Col) & Camp, K. (Col)

JOHNS HOPKINS UNIVERSITY

1/02/24 → 31/01/25