

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 the V-gait Caren system providing state-of-the-art computer-assisted rehabilitation environments through video motion capture, virtual reality, 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

### **A sensitive data analysis approach for detecting changes in dynamic postural stability**

Moudy, S. C., Patterson, R. M. & Bugnariu, N., 17 Jul 2020, In: Journal of Biomechanics. 108, 109899.

### **A current snapshot of the state of 3D printing in hand rehabilitation**

Patterson, R. M., Salatin, B., Janson, R., Salinas, S. P. & Mullins, M. J. S., 1 Apr 2020, In: Journal of Hand Therapy. 33, 2, p. 156-163 8 p.

### **A pilot study on the design and validation of a hybrid exoskeleton robotic device for hand rehabilitation**

Haghshenas-Jaryani, M., Patterson, R. M., Bugnariu, N. & Wijesundara, M. B. J., 1 Apr 2020, In: Journal of Hand Therapy. 33, 2, p. 198-208 11 p.

### **Innovation in hand therapy: A reflection on the past and thoughts for the future**

Priganc, V. W. & Patterson, R. M., 1 Apr 2020, In: Journal of Hand Therapy. 33, 2, p. 153-155 3 p.

### **Medical virtual reality**

Dennis, O. P. & Patterson, R. M., 1 Apr 2020, In: Journal of Hand Therapy. 33, 2, p. 243-245 3 p.

### **What does hand rehabilitation look like in 50 years?**

Patterson, R. M. & Priganc, V., 1 Apr 2020, In: Journal of Hand Therapy. 33, 2, p. 269-270 2 p.

### **Muscular architecture of the popliteus muscle and the basic science implications**

Wood, A., Boren, M., Dodgen, T., Wagner, R. & Patterson, R. M., Mar 2020, In: Knee. 27, 2, p. 308-314 7 p.

### **Children with Autism Spectrum Disorder, Developmental Coordination Disorder, and typical development differ in characteristics of dynamic postural control: A preliminary study**

Miller, H. L., Caçola, P. M., Sherrod, G. M., Patterson, R. M. & Bugnariu, N. L., Jan 2019, In: Gait and Posture. 67, p. 9-11 3 p.

### **Soft robotic devices for hand rehabilitation and assistance: A narrative review**

Chu, C. Y. & Patterson, R. M., 17 Feb 2018, In: Journal of NeuroEngineering and Rehabilitation. 15, 1, 9.

### **Development of a novel visuomotor integration paradigm by integrating a virtual environment with mobile eye-tracking and motion-capture systems**

Miller, H. L., Bugnariu, N., Patterson, R. M., Wijayasinghe, I. & Popa, D. O., 10 Aug 2017, *2017 International Conference on Virtual Rehabilitation, ICVR 2017*. Institute of Electrical and Electronics Engineers Inc., 8007481. (International Conference on Virtual Rehabilitation, ICVR; vol. 2017-June).

## **Sponsored Projects**

### **2010 Summer Bioengineering Conference**

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

### **2010 Summer Bioengineering Conference**

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

### **2010 Summer Bioengineering Conference**

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

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

Hensel, K., Patterson, R., Bugnariu, N., Mason, D., Seals, R. & Quiben, M.  
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., Knebl, J. & Bugnariu, N.  
Intramural Research(UNTHSC)  
1/07/16 → 31/12/17

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

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

### **Human Movement Performance Laboratory Equipment Upgrade**

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

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

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

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

Bugnariu, N. & Patterson, R.

University of Texas at Arlington  
1/10/12 → 31/05/17

**New Manufacturing Innovations in Lower Limb Prosthetics**

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

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Dombroski, R. T. & Patterson, R.  
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. & Patterson, R.  
Intramural Research(UNTHSC)  
1/04/14 → 31/08/15

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

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

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

**Stiffness Evaluation of Shoulder Disability**

Connors, M. & Patterson, R.  
Intramural Research(UNTHSC)  
1/07/11 → 31/12/12

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

Patterson, R., PATTERSON, R. M., PATTERSON, R. M. & PATTERSON, R. M.  
National Institute of Arthritis and Musculoskeletal and Skin Diseases, National Institutes of Health  
1/01/05 → 31/12/09

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

Patterson, R.  
Intramural Research(UNTHSC)  
1/03/14 → 31/12/15