Marius Dettmer, PhD

Medical researcher (PhD in Neuromotor Control and Biomechanics) with over fifteen years of experience in academia (with a strong focus on manuscript publications in peer-reviewed journals, contributions to scientific and medical text books, and presentations at international scientific conferences). Also experienced in clinical trial site management including regulatory matters, compliance, and team leadership.
Extensive knowledge and training related to research projects concerning Robotics, Surgical techniques, implant design, sensory augmentation, regenerative medicine.

Current position

Scientific Consultant
Alliance of Cardiovascular Researchers
New Orleans, LA

Work Experience

- **May 2020- July 2020 Scientific consultant for Alliance of Cardiovascular Researchers, New Orleans, LA**
  - Design and review of clinical trial protocols for stem-cell related therapy
  - Literature review and analyses for stem-cell therapy
  - Liaison between potential trial sites, study sponsors, etc.

- **July 2016- May 2020 Director of Research MBJRF, Houston, TX**

  - Manage data collection, data analysis, abstract/manuscript preparation, and submission for publication.
  - Communicate with both medical professionals and non-medical supporters and affiliates of the research foundation regarding current broad and specific research developments, current and future projects, challenges, and opportunities.
  - Liaison for interactions between medical stakeholders, researchers, research sponsors, hospitals (in addition to clinics and imaging facilities) for clinical trials.
  - Present research results and communicate with KOL at international scientific conferences.
  - Manage the foundation including annual budgeting and financial planning, fundraising, contract negotiations, study set-up, IRB communications, FDA compliance, CRO communication.
  - Generate and implement research facility documents such as study protocols, consent forms, technical documentation, SOPs.

- Supervise and coordinate work of two medical researchers, three research coordinators, and three research interns.
- Review manuscripts for numerous international scientific publications in the areas of orthopedics and neuromotor control.
- Designed and managed 12 clinical studies.
- Transformed the foundation successfully on operational level to achieve sustainability based on sponsor-initiated trials, fundraising events, and research grants.
- Managed site for successful FDA audit as part of IDE trial (Robotics).
- Successfully managed and supported a recent surgical robot IDE study, two separate ceramic-on-ceramic bearing hip arthroplasty studies (post market approval), and an IDE study related to fluoroscopy-guided hyaluronic acid injection at the hip.
- Co-authored and published over 25 manuscripts in the last 5 years (published abstracts, journal publications, book chapters)

- **September 2015-April 2016 Postdoctoral Research Fellow, University of Potsdam, Germany**

  - Conducted several studies related to cognition and motor control, specifically concerning brain activity in older adults and risk for falls (kinematic analysis and EEG analysis during postural control).
  - Designed and taught Master's degree level class "Methods of Neurophysiology in Health and Movement Science".
  - Wrote three book chapters related to Gerontology research, published in 2018

- **June 2014-September 2015 Postdoctoral Research Fellow, Memorial Bone & Joint Research Foundation, Houston TX**

  - Conducted several academic studies, published manuscripts in peer-reviewed journals.
  - Presented research results at scientific conferences.
  - Communicated current projects, future projects, and developments to non-academic affiliates of the foundation.

- **July 2012-December 2012 Social worker (contractor) for non-profit "Leben mit Behinderung e.V.", Hamburg, Germany**

  - Supported physically and mentally impaired individuals' daily activities and recreational activities.

- **October 2008-May 2014: Research assistant, University of Houston Center for Neuromotor and Biomechanics Research (CNBR) at National Center for Human Performance (Texas Medical Center)**

  - Designed several academic studies including dissertation project.

- Conducted academic research as member of the lab.
- Presented results at scientific conferences such as Society for Neuroscience Annual meeting, published manuscripts in peer-reviewed journals.

- **January 2007-May 2012: Teaching Fellow/Teaching Assistant, University of Houston, Health and Human Performance Department (HHP)**

  - Designed curriculum for several undergraduate classes at UH Health and Human Performance Department
  - Taught numerous undergraduate classes as Teaching Fellow, Teaching Assistant

- **August 2005-December 2005: Exercise Consultant/Research assistant WISE 2005 [Women International Space Simulation for exploration (NASA-ESA-CSA-CNES)], Toulouse, France**

  - Responsible for data collection, data analysis, and exercise testing/training during the Space Analog.

- **July 2001-July 2002: Research assistant, Department of Sport Science, Ruhr-Universität-Bochum,, Germany (Prof. Dr. D. Steinhöfer)**.

  - Provided literature review and manuscript editing services for „Grundlagen des Athletiktrainings“ (D. Steinhöfer 2003. Basics of athletic training, Muenster: Philippka).

- **May 2004-July 2005 Sailing instructor “Die kleinen Segler”, Bochum, Germany**

  - Instructed sailing classes for children 8-10 years.

- **May 2001- May 2004 Fitness instructor/Personal Trainer “Fit24”, Wattenscheid, Germany**

  - Designed evidence-based fitness regimen and workout plans for a large number of clients as personal trainer.

- **June 1998- July 1999 Civil Service Arbeiter Samariter Bund Osnabrueck, Germany**

  - Social worker and driver for senior citizens, mentally challenged adolescents and physically impaired individuals of all ages.

Education

- **PhD**, **Kinesiology (Neuromotor Control/Biomechanics)**, **May 2014**
  University of Houston

Dissertation: *Vibration of the foot sole as an intervention to improve older adults' postural stability*

- **Diploma Sport Science, May 2005**
  Ruhr-Universitaet-Bochum, Germany

Thesis: *Effects of different modes of exercise on lipid metabolism in healthy individuals*

- **A-Levels, May 1998**
  Carolinum Osnabrueck, Germany

Languages

- German (native)
- English (fluent)
- French (B2)
- Spanish (A2)

Awards and Scholarships

- April 2013 UH College of Liberal Arts and Social Science Dissertation Award
- June 2011 Presidential/Cullen/Erhardt Recruitment Match Fellowship
- April 2010 Health and Human Performance Department Graduate Teaching Excellence Award
- April 2010 University of Houston Dr. Mary-Lou and Eddie Hernandez Scholarship
- April 2010 University of Houston Margie Sterr Movement Science Scholarship
- May 2009 University of Houston Center for Neuromotor and Biomechanics Research Summer Grant Award
- April 2009 University of Houston, College of Education Alumni Organization Scholarship Award
- February 2009 HHP Graduate Student Research Grant Award
- October 2008 Annual Meeting of the National Center for Human Performance. Poster competition 2nd place
- February 2008 Bertec Corporation Research Proposal Contest Winner
- January 2007 – 2012 GATF-Award/Teaching Fellowship, University of Houston, Department of Health and Human Performance
- 2001-2002 Research assistantship Ruhr-Universitaet-Bochum, Department of Sport Science

Peer reviewed Publications (journal papers and abstracts)

1. Malanka S, **Dettmer M**, Pourmoghaddam A, Veverka, M, Kreuzer SW. Comparison of Patient-Reported Outcomes of Total Hip Arthroplasty between a Neck-Preserving

Short-Stem Implant and a Conventional Neck-Sacrificing Implant. *J Hip Surg*, 2019, 03(02), 78-85

2. Kreuzer S Malanka, S Pourmoghaddam A, **Dettmer M**. Comparison of Patient-Reported Outcomes in Neck-Preserving Short-Stem Implant versus Cnventional Neck-sacrificing Implant. Orthopaedic Proceedings 101 (SUPP_4), 105-105
3. Kreuzer S, Malanka S, **Dettmer M**, Pourmoghaddam A. Veverka M. Improved Patient-reported Outcomes following Total Hip Arthroplasty with Neck-preserving Short-Stem implant versus conventional neck-sacrificing implant. SW Bone Joint J 100-B (SUPP 6), 14-14
4. Connaboy C, Rawcliffe A, Graham S, Flanagan S, Pourmoghaddam A, **Dettmer M**, Bansbach H. Efficacy of unilateral strength training for enhancing load carriage performance. Journal of Science and Medicine in Sport 2017, 20, S2
5. Pourmoghaddam A, **Dettmer M***, Malanka S, Veverka M, Paloski W O'Connor DP, Layne CS. Assessing Multiple Muscle Activation During Squat Movements with Different Loading Conditions– An EMG Study. *Biomed Tech* (Berl). 2017 Jun 23. pii: /j/bmte.ahead-of-print/bmt-2016-0226/bmt-2016-0226.xml. doi: 10.1515/bmt-2016-0226
6. Pourmoghaddam A, Kreuzer S, Freedhand A, **Dettmer M.** Increasing Pre-operative Templating Accuracy in Total Hip Arthroplasty. *Bone Joint J* 98 (SUPP 2), 124-124
7. **Dettmer M***, Pourmoghaddam A, Veverka M, Kreuzer S. MiniHip Arthroplasty versus Hip Resurfacing For Younger Patients. *Bone Joint J* May 2016, 98-B (SUPP 8) 123
8. **Dettmer M***, Pourmoghaddam A, Veverka M, Kreuzer S. Femoral Component Rotation In Total Knee Arthroplasty: Anatomical Landmark Methods Versus A Force Sensor Device. *Bone Joint J* May 2016, 98-B (SUPP 8) 124;
9. **Dettmer M***, Pourmoghaddam A, Lee CB, Layne CS. Associations between tactile sensory threshold and postural performance, and effects of healthy aging and sub-threshold vibrotactile stimulation on postural outcomes in a simple-dual task. *Current Gerontology and Geriatrics Research* Vol 2016
10. **Dettmer M***, Pourmoghaddam A, Lee CB, Layne CS. Does aging and tactile noise stimulation affect responses to support surface translations in healthy adults? *Current Gerontology and Geriatrics Research* Vol. 2016
11. **Dettmer M***, Pourmoghaddam A, Kreuzer SW. Robot-assisted Total Hip Arthroplasty after Chiari Pelvic Osteotomy: A Case Report. *Reconstructive Review* 2016 6(3), 19-23
12. Pourmoghaddam A, **Dettmer M***, Malanka S, Kreuzer SW. Comparison of Functional Outcomes of Total Knee Arthroplasty Using Two Different Single Radius Implants. *Reconstructive Review* 2016, 6(1)
13. Kreuzer SW, Pourmoghaddam A, Leffers KJ, Johnson CW, **Dettmer M***. Computed Tomography Analysis of Postsurgery Femoral Component Rotation Based on a Force Sensing Device Method versus Hypothetical Rotational Alignment Based on Anatomical Landmark Methods: A Pilot Study. *Advances in Orthopedics* Vol. 2016 http://dx.doi.org/10.1155/2016/4961846
14. Pourmoghaddam A, **Dettmer M***, O'Connor DP, Layne CS. A Novel Approach to Measuring Multiple Neuromuscular Activation Using EMG - A Generalizability Analysis. *Biomed Tech (Berl).* 2015 Dec 18. pii: /j/bmte.ahead-of-print/bmt-2015-0037/bmt-2015-0037.xml. doi: 10.1515/bmt-2015-0037

15. **Dettmer M***, Pourmoghaddam A, Lee CB, Layne CS. Effects of stochastic resonance on postural performance and control in a sensory conflict task. *Somatosensory & Motor Research* 2015 Apr 17:1-8
16. **Dettmer M***, Pourmoghaddam A, Kreuzer SW. Comparison of patient-reported outcome from Neck Preserving, Short-stem Arthroplasty and Resurfacing Arthroplasty in younger osteoarthritis patients: A matched-cohort study. *Advances in Orthopaedics* Vol 2015. http://dx.doi.org/10.1155/2015/817689
17. Pourmoghaddam A**, Dettmer M***, O'Connor DP, Paloski WH, Layne CS. Identification of Changing Lower Limb Neuromuscular Activation in Parkinson's Disease during Treadmill Gait with and without Levodopa Using a Nonlinear Analysis Index. *Parkinsons Disease*, Volume 2015, http://dx.doi.org/10.1155/2015/497825
18. Pourmoghaddam A, **Dettmer M**, Freedhand AM, Domingues BC, Kreuzer SW. A Patient-Specific Predictive Model Increases Preoperative Templating Accuracy in Hip Arthroplasty. *Journal of Arthroplasty*. 2015 30(4):622-6
19. **Dettmer M**. Vibration of the foot sole as an Intervention to improve older adults' postural stability. (doctoral dissertation, University of Houston, May 2014)
20. **Dettmer M***, Pourmoghaddam A, O'Connor DP, Layne CS. Interaction of support surface stability and Achilles tendon vibration during a postural adaptation task. *Human Movement Science* 32 (2013), 214-227

[*=Corresponding author]

Book chapters

1. Kreuzer SW, Pourmoghaddam A, **Dettmer M**. Anterior Total Hip Arthroplasty. In: Stubbs A (Editor): Hip Surgery: Tricks of the Trade. New York: Thieme (in production)
2. **Dettmer M**, Kreuzer SW, Malanka S. Hip replacement: Intraop planning and assistive devices (CAS, Robotics) (pp. 99-113). In: Riviere, C & Vendittoli PA (Editors), *Patient-specific Hip & Knee replacement*. Basel, Switzerland: Springer
3. Malanka S, **Dettmer M**, Kreuzer SW (2019). Bicompartmental Knee Arthroplasty Techniques: Mako. In: Lonner JH (Editor): *Robotics in Knee and Hip Arthroplasty, Current Concepts, Techniques and Emerging Uses* (pp.135-144). Basel, Switzerland: Springer
4. Muehlbauer T, **Dettmer M**, Granacher U (2018). Einleitung - Gleichgewicht im Alter. In: Granacher U, Mechling H & Voelcker-Rehage C (Editors), *Handbuch Bewegungs- und Sportgerontologie* (pp. 361-363). Schorndorf, Germany: Hofmann
5. **Dettmer M**, Granacher U, Muehlbauer T (2018). Apparative Verfahren zur Diagnostik des Gleichgewichts, des Gangs. In: Granacher U, Mechling H & Voelcker-Rehage C (Editors), *Handbuch Bewegungs- und Sportgerontologie* (pp. 370-374). Schorndorf, Germany: Hofmann
6. Muehlbauer T, **Dettmer M**, Granacher U (2018). Klinische Verfahren zur Gleichgewichtsdiagnostik. In: Granacher U, Mechling H & Voelcker-Rehage C

(Editors), *Handbuch Bewegungs- und Sportgerontologie* (pp. 375-379). Schorndorf, Germany: Hofmann

7. **Dettmer M**, Kreuzer, SW (2015). Robot-assisted, Bi-unicompartmental Knee Arthroplasty. *Operational Techniques in Orthopaedics 25(2):* 155-162. http://dx.doi.org/10.1053/j.oto.2015.03.004

Conference presentations/abstracts

1. **Dettmer M (**Presenter)**,** Kreuzer SW, Malanka S, Pastorini H, Pourmoghaddam A. Robotic Total Knee Arthroplasty With Kinematic Alignment. International Society for Technology in Arthroplasty 2019, Toronto, Canada.
2. Pourmoghaddam A, **Dettmer M,** Kreuzer SW, Malanka S, Pastorini H. The Implication of Preoperative Outcome Expectation on Postoperative Clinical Outcome of Total Hip Arthroplasty. International Society for Technology in Arthroplasty 2019, Toronto, Canada.
3. Pourmoghaddam A, **Dettmer M (**Presenter)**,** Kreuzer SW, Malanka S, Pastorini H. Obesity and the Outcome of Robotic Unicompartmental Knee Arthroplasty. International Society for Technology in Arthroplasty 2019, Toronto, Canada.
4. Malanka S, **Dettmer M (**Presenter), Pourmoghaddam A, Kreuzer SW. Hip Arthroplasty with Neck-Preserving Short-Stem Implant vs. Conventional Neck-Sacrificing Implant. International Society for Technology in Arthroplasty 2017, Seoul, South Korea.
5. **Dettmer M (**Presenter), Pourmoghaddam A, Veverka M, Kreuzer SW. Femoral Component Rotation in Total Knee Arthroplasty: Anatomical Landmark Methods Versus a Force Sensor Device. International Society for Technology in Arthroplasty 2015, Vienna, Austria.
6. Pourmoghaddam A, Veverka M, **Dettmer M (**Presenter), Kreuzer SW. Identifying the Postoperative Outcome of Total Hip Arthroplasty From Musculoskeletal Outcomes Data Evaluation and Management System International Society for Technology in Arthroplasty 2015, Vienna, Austria.
7. Pourmoghaddam A, **Dettmer M (**Presenter)**,** Veverka M, Freedhand A, Kreuzer SW. Algorithm to Improve Acetabular Component Templating in Total Hip Arthroplasty. International Society for Technology in Arthroplasty 2015, Vienna, Austria.
8. **Dettmer M (**Presenter), Pourmoghaddam A, Veverka M, Kreuzer SW. MiniHip Arthroplasty Versus Hip Resurfacing for Younger Patients. International Society for Technology in Arthroplasty 2015, Vienna, Austria.
9. Madansingh S, Iranpoor D, **Dettmer M**, Peters BT, Mulavara AP, Bloomberg JJ Virtual reality as a medium for sensorimotor adaptation training and spaceflight countermeasures. International Society for Gravitational Physiology Annual Meeting 2015, Ljubljana, Slovenia.
10. Kreuzer SW, **Dettmer M**, Pourmoghaddam A. Comparison of patient-reported outcomes from MiniHip arthroplasty and Hip Resurfacing in younger adults. Podium presentation. International Congress for Joint Reconstruction 2015, Paris, France.

11. **Dettmer M**, Kreuzer SW, Pourmoghaddam A. Bi-unicompartmental Knee Arthroplasty as an Alternative to a Total Knee Procedure. International Congress for Joint Reconstruction 2015, Paris, France.
12. **Dettmer M,** Kreuzer SW, Pourmoghaddam A. Improving Preoperative Templating Accuracy Based on Patients' Demographic Information in Total Hip Arthroplasty. International Congress for Joint Reconstruction 2015, Paris.
13. Increasing Preoperative Templating Accuracy in Total Hip Arthroplasty. Pourmoghaddam A, Kreuzer SW, Freedhand A, **Dettmer M**. International Society for Technology in Arthroplasty 2014 Kyoto, Japan.
14. **Dettmer M**, Pourmoghaddam A, Layne CS. Effects of healthy aging on motor lateralization: A functional Near-Infrared Spectroscopy (fNIRS) study. Neuroscience 2010, San Diego.
15. Pourmoghaddam A, **Dettmer M**, Paloski WH, et al. Synergos index, identifying multiple muscle coactivation during isotonic exercise. Neuroscience 2010, San Diego.
16. **Dettmer M** (Presenter), Pourmoghaddam A, O'Connor DP, Layne CS. Influence of tendon vibration on center of pressure sway regularity during a postural control learning task. Neuroscience 2009, Chicago.
17. Pourmoghaddam A, **Dettmer M**, Paloski WH, et al. Sunergos a clinical index for identifying multiple muscle co-activation. Neuroscience 2009, Chicago.
18. **Dettmer M** (Presenter), Pourmoghaddam A, O'Connor DP, Layne CS. Learning of a postural task under different sensory conditions. Annual Meeting of the National Center for Human Performance, Houston, 2nd Award Poster Competition.
19. Layne CS, Pourmoghaddam A, Kurz MJ, Arellano CJ, **Dettmer M**. Lower limb neuromuscular activation during treadmill walking is moderately affected by anti-Parkinson drugs. Neuroscience 2008, Washington.
20. Pourmoghaddam A, Kurz MJ, Arellano CJ, **Dettmer M**, Layne CS. Identifying changes in muscle synergies in individuals with Parkinson's disease during treadmill walking using a new analysis method. Neuroscience 2008, Washington.
21. Layne CS, Pourmoghaddam A, Kurz MJ, Arellano CJ, **Dettmer M**, Hickerson A. Parkinsonian gait: Neuromuscular adaptations to increasing speed. Neuroscience 2007, San Diego.
22. Pourmoghaddam A, Kurz MJ, Layne CS, **Dettmer M**. Parkinsonian Gait: Lower limb neuromuscular co-contraction during treadmill locomotion. Neuroscience 2007, San Diego.

Patents

1. Provisional Patent granted: Pourmoghaddam A, **Dettmer M**, Kreuzer SW, Freedhand A. Method to Improve the Accuracy of Radiographic Templating in Hip Replacement (2014). (62/063,766)